

FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 3 OF 10



DUVAL COUNTY, FLORIDA (ALL JURISDICTIONS)

COMMUNITY NAME	COMMUNITY NUMBER
ATLANTIC BEACH, CITY OF	120075
BALDWIN, TOWN OF*	120076
JACKSONVILLE, CITY OF	120077
JACKSONVILLE BEACH, CITY OF	120078
NEPTUNE BEACH, CITY OF	120079

*No Special Flood Hazard Areas Identified



FEMA

PRELIMINARY
7/29/2016

REVISED:

<DATE>

FLOOD INSURANCE STUDY NUMBER
12031CV003B

Version Number 2.3.3.2

TABLE OF CONTENTS

Volume 1

	<u>Page</u>
SECTION 1.0 – INTRODUCTION	1
1.1 The National Flood Insurance Program	1
1.2 Purpose of this Flood Insurance Study Report	2
1.3 Jurisdictions Included in the Flood Insurance Study Project	2
1.4 Considerations for using this Flood Insurance Study Report	6
 SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS	 17
2.1 Floodplain Boundaries	17
2.2 Floodways	62
2.3 Base Flood Elevations	63
2.4 Non-Encroachment Zones	63
2.5 Coastal Flood Hazard Areas	63
2.5.1 Water Elevations and the Effects of Waves	63
2.5.2 Floodplain Boundaries and BFEs for Coastal Areas	65
2.5.3 Coastal High Hazard Areas	66
2.5.4 Limit of Moderate Wave Action	67
 SECTION 3.0 – INSURANCE APPLICATIONS	 68
3.1 National Flood Insurance Program Insurance Zones	68
3.2 Coastal Barrier Resources System	68
 SECTION 4.0 – AREA STUDIED	 69
4.1 Basin Description	69
4.2 Principal Flood Problems	70
4.3 Non-Levee Flood Protection Measures	70
4.4 Levees	71

Figures

	<u>Page</u>
Figure 1: FIRM Panel Index	9
Figure 2: FIRM Notes to Users	10
Figure 3: Map Legend for FIRM	13
Figure 4: Floodway Schematic	62
Figure 5: Wave Runup Transect Schematic	65
Figure 6: Coastal Transect Schematic	67

<u>Tables</u>	<u>Page</u>
Table 1: Listing of NFIP Jurisdictions	2
Table 2: Flooding Sources Included in this FIS Report	18
Table 3: Flood Zone Designations by Community	68
Table 4: Coastal Barrier Resources System Information	69
Table 5: Basin Characteristics	69
Table 6: Principal Flood Problems	70
Table 7: Historic Flooding Elevations	70
Table 8: Non-Levee Flood Protection Measures	71
Table 9: Levees	71

Volume 2	<u>Page</u>
SECTION 5.0 – ENGINEERING METHODS	72
5.1 Hydrologic Analyses	72

<u>Figures</u>	<u>Page</u>
Figure 7: Frequency Discharge-Drainage Area Curves	128

<u>Tables</u>	<u>Page</u>
Table 10: Summary of Discharges	73
Table 11: Summary of Non-Coastal Stillwater Elevations	129
Table 12: Stream Gage Information used to Determine Discharges	132

Volume 3	<u>Page</u>
SECTION 5.0 – ENGINEERING METHODS (continued)	
5.2 Hydraulic Analyses	133
5.3 Coastal Analyses	199
5.3.1 Total Stillwater Elevations	200
5.3.2 Waves	204
5.3.3 Coastal Erosion	204
5.3.4 Wave Hazard Analyses	204
5.4 Alluvial Fan Analyses	217

SECTION 6.0 – MAPPING METHODS	218
6.1 Vertical and Horizontal Control	218
6.2 Base Map	219
6.3 Floodplain and Floodway Delineation	219

Figures

	<u>Page</u>
Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas	201
Figure 9: Transect Location Map	216

Tables

	<u>Page</u>
Table 13: Summary of Hydrologic and Hydraulic Analyses	134
Table 14: Roughness Coefficients	193
Table 15: Summary of Coastal Analyses	199
Table 16: Tide Gage Analysis Specifics	203
Table 17: Coastal Transect Parameters	206
Table 18: Summary of Alluvial Fan Analyses	217
Table 19: Results of Alluvial Fan Analyses	217
Table 20: Countywide Vertical Datum Conversion	218
Table 21: Stream-Based Vertical Datum Conversion	218
Table 22: Base Map Sources	219
Table 23: Summary of Topographic Elevation Data used in Mapping	220

Volume 4

Tables

	<u>Page</u>
Table 24: Floodway Data	221

Volume 5

Page

SECTION 6.0 – MAPPING METHODS (continued)

6.4 Coastal Flood Hazard Mapping	324
6.5 FIRM Revisions	329
6.5.1 Letters of Map Amendment	329
6.5.2 Letters of Map Revision Based on Fill	329
6.5.3 Letters of Map Revision	330
6.5.4 Physical Map Revisions	330
6.5.5 Contracted Restudies	331
6.5.6 Community Map History	331

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION	332
7.1 Contracted Studies	332
7.2 Community Meetings	333
 SECTION 8.0 – ADDITIONAL INFORMATION	 335
 SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES	 336

Tables

	<u>Page</u>
Table 24: Floodway Data (continued)	309
Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams	324
Table 26: Summary of Coastal Transect Mapping Considerations	325
Table 27: Incorporated Letters of Map Change	330
Table 28: Community Map History	332
Table 29: Summary of Contracted Studies Included in this FIS Report	333
Table 30: Community Meetings	334
Table 31: Map Repositories	335
Table 32: Additional Information	335
Table 33: Bibliography and References	337

Exhibits

Flood Profiles	<u>Panel</u>
Big Davis Creek	01-02 P
Big Fishweir Creek	03 P
Big Fishweir Creek Tributary 1	04 P
Bigelow Branch	05 P
Blockhouse Creek	06-07 P
Bonett Branch	08 P
Box Branch	09-10 P
Box Branch Tributary 1	11 P
Butcher Pen Creek	12 P
Caldwell Branch	13-14 P
Caldwell Branch Tributary 1	15 P
Caldwell Branch Tributary 2	16 P
Caney Branch	17 P
Cedar Creek	18-21 P
Cedar Creek Tributary 2	22 P
Cedar Creek Tributary 6	23 P
Cedar Creek Tributary 7	24 P
Cedar Creek Tributary 8	25 P
Cedar River	26-28 P
Cedar River Tributary 1	29 P
Cedar River Tributary 12	30 P
Cedar River Tributary 13	31 P
Cedar River Tributary 14	32 P

Cedar River Tributary 15	33 P
Cedar River Tributary 16	34 P
Cedar River Tributary 17	35 P
Cedar River Tributary 19	36 P
Cedar Swamp Creek	37-39 P
Cedar Swamp Creek Tributary 1	40 P
Cedar Swamp Creek Tributary 2	41 P
Christopher Creek	42 P
Christopher Creek Tributary 1	43 P
Cormorant Branch	44-45 P
Craig Creek	46 P
Deep Bottom Creek	47 P
Deep Bottom Creek Tributary 1	48 P
Deer Creek	49 P
Dunn Creek	50-53 P
Dunn Creek Tributary 1	54 P
Dunn Creek Tributary 2	55 P
Dunn Creek Tributary 3	56 P

Volume 6

Exhibits

Flood Profiles	<u>Panel</u>
Durbin Creek	57-58 P
Durbin Creek Tributary 1	59 P
East Branch	60 P
East Branch Tributary 1	61 P
Fishing Creek	62-63 P
Fishing Creek Tributary 1	64 P
Ginhouse Creek	65-66 P
Goodbys Creek	67-68 P
Goodbys Creek Tributary 1	69 P
Goodbys Creek Tributary 2	70 P
Goodbys Creek Tributary 3	71 P
Goodbys Creek Tributary 4	72 P
Goodbys Creek Tributary 5	73 P
Greenfield Creek	74 P
Gulley Branch	75 P
Half Creek	76-77 P
Half Creek Tributary 1	78 P
Half Creek Tributary 2	79 P
Hogan Creek	80-81 P
Hogpen Creek	82 P
Hogpen Creek Tributary 1	83 P
Hopkins Creek	84 P
Hopkins Creek Tributary 1	85 P
Hopkins Creek Tributary 2	86 P
Hopkins Creek Tributary 3	87 P
Jones Creek	88-89 P

Jones Creek Tributary 1	90 P
Jones Creek Tributary 2	91-92 P
Julington Creek	93-96 P
Julington Creek Tributary 1	97 P
Julington Creek Tributary 4	98 P
Julington Creek Tributary 5	99 P
Julington Creek Tributary 8	100 P
Little Cedar Creek	101-103 P
Little Cedar Creek Tributary 1	104 P
Little Cedar Creek Tributary 2	105 P
Little Fishweir Creek	106-107 P
Little Pottsburg Creek	108-109 P
Little Pottsburg Creek Tributary 1	110 P
Little Pottsburg Creek Tributary 2	111 P
Little Pottsburg Creek Tributary 3	112 P
Little Sixmile Creek	113-114 P
Little Sixmile Creek Tributary 1	115 P
Little Sixmile Creek Tributary 2	116 P
Little Sixmile Creek Tributary 3	117 P
Little Trout River	118-119 P
Little Trout River Tributary 4	120 P
Little Trout River Tributary 6	121 P
Little Trout River Tributary 10	122 P
Long Branch	123 P
Long Branch Tributary 1	124 P
Magnolia Gardens Creek	125-126 P
McCoy Creek	127-128 P
McCoy Creek North Branch	129 P
McCoy Creek Southwest Branch	130 P
McCoy Creek Tributary 5	131 P
McGirts Creek	132-133 P
McGirts Creek Tributary 11	134 P
McGirts Creek Tributary 12	135 P
McGirts Creek Tributary 14	136 P
Mill Dam Branch	137-139 P
Mill Dam Branch Canal	140 P
Mill Dam Branch Tributary 3	141 P
Mill Dam Branch Tributary 4	142 P
Mill Dam Branch Tributary 5	143 P
Miller Creek	144 P

Volume 7
Exhibits

Flood Profiles	<u>Panel</u>
Miller Creek Tributary 1	145 P
Miramar Tributary	146 P
Moncrief Creek	147-148 P
Moncrief Creek Tributary 4	149 P
Mount Pleasant Creek	150-153 P
Mount Pleasant Creek Tributary 3	154 P
Mount Pleasant Creek Tributary 4	155 P
Mount Pleasant Creek Tributary 6	156 P
Nassau River/Thomas Creek	157 P
Thomas Creek	158-159 P
New Rose Creek	160 P
New Rose Creek Tributary 1	161 P
Newcastle Creek	162 P
Newcastle Creek Tributary 1	163 P
Ninemile Creek	164-165 P
Ninemile Creek Tributary 1	166 P
Ninemile Creek Tributary 2	167 P
Ninemile Creek Tributary 6	168 P
North Fork Sixmile Creek	169-170 P
North Fork Sixmile Creek Tributary 1	171 P
Oldfield Creek	172-173 P
Oldfield Creek Tributary 1	174 P
Oldfield Creek Tributary 2	175 P
Oldfield Creek Tributary 3	176 P
Oldfield Creek Tributary 4	177 P
Oldfield Creek Tributary 7	178 P
Open Creek	179-180 P
Open Creek Tributary 1	181 P
Open Creek Tributary 2	182 P
Open Creek Tributary 3	183 P
Open Creek Tributary 4	184 P
Ortega River	185-190 P
Ortega River Tributary 1	191 P
Ortega River Tributary 2	192 P
Ortega River Tributary 3	193-195 P
Ortega River Tributary 4	196-197 P
Ortega River Tributary 5	198 P
Ortega River Tributary 6	199 P
Ortega River Tributary 7	200 P
Ortega River Tributary 10	201 P
Ortega River Tributary 11	202 P
Pablo Creek	203-205 P
Pablo Creek Tributary 1	206 P
Pablo Creek Tributary 2	207-208 P
Pablo Creek Tributary 3	209-210 P
Pickett Branch	211-212 P

Pickett Branch Tributary 3	213 P
Pickett Branch Tributary 4	214 P
Pickett Branch Tributary 5	215 P
Pottsburg Creek	216-219 P
Pottsburg Creek Tributary 5	220 P
Puckett Creek	221 P
Red Bay Branch	222 P
Red Bay Branch Tributary 1	223 P
Ribault River	224-225 P
Ribault River Tributary 2	226 P
Ribault River Tributary 5	227 P
Ribault River Tributary 8	228 P
Ribault River Tributary 9	229 P
Rowell Creek	230-231 P
Rowell Creek Tributary 2	232 P

Volume 8

Exhibits

Flood Profiles	<u>Panel</u>
Rushing Branch	233 P
Rushing Branch Tributary 1	234 P
Sal Taylor Creek	235-237 P
Sal Taylor Creek Tributary 2	238 P
Sal Taylor Creek Tributary 3	239 P
Sal Taylor Creek Tributary 4	240 P
Sandalwood Canal	241-242 P
Sawmill Slough/Buckhead Branch	243 P
Sawmill Slough/Buckhead Branch Tributary 1	244 P
Sawmill Slough/Buckhead Branch Tributary 2	245 P
Seaton Creek	246-247 P
Seaton Creek Tributary 1	248-250 P
Seaton Creek Tributary 2	251 P
Second Puncheon Branch	252-254 P
Second Puncheon Branch Tributary 1	255 P
Second Puncheon Branch Tributary 3	256-257 P
Second Puncheon Branch Tributary 4	258 P
Second Puncheon Branch Tributary 5	259 P
Second Puncheon Branch Tributary 6	260 P
Sherman Creek	261-262 P
Sherman Creek Canal	263 P
Silversmith Creek	264 P
Silversmith Creek Tributary 1	265 P
Sixmile Creek	266-269 P
Sixmile Creek Tributary 6	270 P
Sixmile Creek Tributary 9	271 P
St. Mary's River Tributary	272 P

Strawberry Creek	273-274 P
Sweetwater Creek	275-276 P
Tacito Creek	277 P
Tiger Hole Swamp	278 P
Tiger Pond Creek	279 P
Tiger Pond Creek Tributary 1	280 P
Tributary to Little Sixmile Creek Tributary 1	281 P
Tributary 1 to Miramar Tributary	282 P
Tributary to Ortega River Tributary 1	283 P
Trout River	284-287 P
Trout River Tributary 2	288-289 P
Trout River Tributary 3	290 P
Trout River Tributary 7	291 P
Trout River Tributary 8	292 P
West Branch	293 P
West Branch Tributary 1	294 P
West Branch Tributary 2	295 P
Williamson Creek	296 P
Williamson Creek Tributary 3	297 P
Williamson Creek Tributary 4	298 P
Wills Branch	299-300 P
Wills Branch Tributary 1	301-303 P
Wills Branch Tributary 2	304 P
Wills Branch Tributary 3	305-307 P
Wills Branch Tributary 4	308 P
Wills Branch Tributary 5	309 P
Wills Branch Tributary 6	310-311 P
Yellow Water Creek Tributary 1	312 P
Wetland 2	313 P
Wetland 3	314 P

Coastal Transect Profiles	<u>Panel</u>
Transect 1	1-6 P

Volume 9

Exhibits

Coastal Transect Profiles	<u>Panel</u>
Transect 2	7-12 P
Transect 3	13-18 P
Transect 4	19-23 P
Transect 5	24-27 P
Transect 6	28-29 P
Transect 7	30-31 P
Transect 8	32-35 P
Transect 9	36-39 P
Transect 10	40-42 P
Transect 11	43-45 P

Transect 12	46-48 P
Transect 13	49-52 P
Transect 14	53-56 P
Transect 15	57-62 P
Transect 16	63-68 P
Transect 17	69-76 P
Transect 18	77-84 P
Transect 19	85-91 P

Volume 10

Exhibits

Coastal Transect Profiles	<u>Panel</u>
Transect 20	92-96 P
Transect 21	97-99 P
Transect 22	100-102 P
Transect 23	103-105 P
Transect 24	106-108 P
Transect 25	109-111 P
Transect 26	112-113 P
Transect 27	114-115 P
Transect 28	116-117 P
Transect 29	118-119 P
Transect 30	120-121 P
Transect 31	122-123 P
Transect 32	124-125 P
Transect 33	126-127 P
Transect 34	128-129 P
Transect 35	130-131 P
Transect 36	132-133 P
Transect 37	134-135 P
Transect 38	136 P
Transect 39	137-140 P
Transect 40	141 P
Transect 41	142-143 P
Transect 42	144 P
Transect 43	145-146 P
Transect 44	147 P
Transect 45	148 P
Transect 46	149 P
Transect 47	150 P
Transect 48	151 P
Transect 49	152-153 P
Transect 50	154 P
Transect 51	155 P
Transect 52	156 P
Transect 53	157 P
Transect 54	158 P
Transect 55	159 P

Transect 56	160 P
Transect 57	161 P
Transect 58	162 P
Transect 59	163 P
Transect 60	164 P
Transect 61	165 P
Transect 62	166 P
Transect 63	167 P
Transect 64	168 P
Transect 65	169 P
Transect 66	170 P
Transect 67	171 P
Transect 68	172 P

Published Separately

Flood Insurance Rate Map (FIRM)

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed on Table 24, "Floodway Data."

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Atlantic Ocean	Entire coastline	Entire coastline	ADCIRC+ SWAN	JPM-OS	2015	A, AE, AO, VE	Offshore starting wave conditions are required for 1-D transect-based wave hazard analysis. As part of the JPM-OS ADCIRC+SWAN regional hydrodynamic and wave modeling, significant wave heights and peak wave periods were produced at each node contained in the ADCIRC mesh. These results provided valuable information on the wave conditions that can be expected to occur during the types of extreme storm events that would produce storm surge elevations with 1- and 0.2-percent-annual-chance probabilities of occurrence. Results from the ADCIRC+SWAN modeling were used to develop starting wave conditions for the coastal hazard analyses within the study area. The Joint Probability Method with Optimal Sampling (JPM-OS) was applied to compute Total Stillwater Elevations (SWELs).
Big Davis Creek ¹	Confluence with Julington Creek	Approximately 3.6 miles upstream of confluence with Julington Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Big Davis Creek Tributary 1	Confluence with Big Davis Creek	Approximately 0.6 miles upstream of confluence with Big Davis Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Big Davis Creek Tributary 1	Approximately 0.6 miles upstream of confluence with Big Davis Creek	Approximately 0.6 miles upstream of Davis Creek Road	*	*	*	AO	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Big Fishweir Creek	At Hershel Street	At Roosevelt Boulevard	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Big Fishweir Creek	At Roosevelt Boulevard	At Lake Shore Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Big Fishweir Creek Tributary 1	Confluence with Big Fishweir Creek	At Cassat Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Big Fishweir Creek Tributary 2	Confluence with Big Fishweir Creek	At Yerkes Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Bigelow Branch	Confluence with Saint Johns River	Approximately 700 feet upstream of 12 th Street	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Bigelow Branch	Approximately 700 feet upstream of 12 th Street	Approximately 1,500 feet upstream of Buckman Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Blockhouse Creek	Confluence with Trout River	Approximately 0.7 miles upstream of Leonid Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Blockhouse Creek	Approximately 0.7 miles upstream of Leonid Road	At Duval Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Bonett Branch	Confluence with Pottsburg Creek	At Interstate-95	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Box Branch	Confluence with Pablo Creek	Approximately 1 mile upstream of confluence with Pablo Creek	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Box Branch	Approximately 1 mile upstream of confluence with Pablo Creek	Confluence of Box Branch Tributary 1	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Box Branch	Approximately 1,370 feet upstream of confluence of Box Branch Tributary 1	Approximately 2,930 feet upstream of confluence of Box Branch Tributary 1	*	*	*	A	
Box Branch	Approximately 2,930 feet upstream of confluence of Box Branch Tributary 1	Approximately 3.7 miles upstream of confluence of Box Branch Tributary 1	*	*	*	AO	
Box Branch Tributary 1	Confluence with Box Branch	Approximately 3,350 feet upstream of confluence with Box Branch	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Butcher Pen Creek	Confluence with Cedar River	At Wesconnett Boulevard	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Butcher Pen Creek	At Wesconnett Boulevard	Approximately 600 feet upstream of Randia Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Caldwell Branch	Confluence with Yellow Water Creek	Approximately 1,300 feet upstream of the confluence with Yellow Water Creek	*	*	*	A	
Caldwell Branch ¹	Approximately 1,300 feet upstream of the confluence with Yellow Water Creek	Approximately 4,100 feet upstream of confluence with Caldwell Branch Tributary 2	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Caldwell Branch Tributary 1	Confluence with Caldwell Branch	Approximately 6,700 feet upstream of confluence with Caldwell Branch	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Caldwell Branch Tributary 2	Confluence with Caldwell Branch	Approximately 4,000 feet upstream of confluence with Caldwell Branch	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Caney Branch	Confluence with Rushing Branch	At New Berlin Road	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Caney Branch	At New Berlin Road	Approximately 1.4 miles upstream of New Berlin Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar Creek ¹	Confluence with Broward River	Approximately 1,050 feet upstream of Harts Road	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Cedar Creek ¹	Approximately 1,050 feet upstream of Harts Road	At Lem Turner Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar Creek Tributary 2	Confluence with Cedar Creek	At Terrell Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar Creek Tributary 6	Confluence with Cedar Creek	Approximately 700 feet upstream of Secretariat Lane	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar Creek Tributary 7	Confluence with Cedar Creek	At Lem Turner Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar Creek Tributary 8	Confluence with Cedar Creek	At Lem Turner Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Cedar River	Confluence with Williamson Creek	Approximately 100 feet upstream of Lane Avenue	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Cedar River	Approximately 100 feet upstream of Lane Avenue	Approximately 1,800 feet upstream of confluence with Cedar River Tributary 16	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar River Tributary 1	Confluence with Cedar River	Approximately 30 feet upstream of Lake Shore boulevard	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Cedar River Tributary 12	Confluence with Cedar River	Approximately 150 feet upstream of Lane Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar River Tributary 12	Approximately 150 feet upstream of Lane Avenue	Approximately 445 feet upstream of Lane Avenue	*	*	*	A	
Cedar River Tributary 13	Confluence with Cedar River	Approximately 100 feet upstream of Normandy Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar River Tributary 14	Confluence with Cedar River	Approximately 900 feet upstream of confluence with Cedar River Tributary 18	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Cedar River Tributary 15	Confluence with Cedar River Tributary 14	Approximately 1,300 feet upstream of confluence with Cedar River Tributary 14	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar River Tributary 16	Confluence with Cedar River	Approximately 2,150 feet upstream of confluence with Cedar River	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar River Tributary 17	Confluence with Cedar River	Approximately 350 feet upstream of Beaver Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar River Tributary 18	Confluence with Cedar River Tributary 14	Approximately 1,860 feet upstream of confluence with Cedar River Tributary 14	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar River Tributary 19	Confluence with Cedar River	Approximately 680 feet upstream of confluence with Cedar River	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar Swamp Creek	Confluence with Pablo Creek	Approximately 3,400 feet upstream of Huffman Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Cedar Swamp Creek Tributary 1	Confluence with Cedar Swamp Creek	At Beach Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Cedar Swamp Creek Tributary 2	Confluence with Cedar Swamp Creek	Confluence with Pablo Creek Tributary 3	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Christopher Creek	Confluence with Saint Johns River	At Christopher Creek Court	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Christopher Creek	At Christopher Creek Court	Approximately 50 feet upstream of St. Augustine Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Christopher Creek Tributary 1	Confluence with Christopher Creek	Approximately 630 feet upstream of confluence with Christopher Creek	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Christopher Creek Tributary 1	Approximately 630 feet upstream of confluence with Christopher Creek	Approximately 30 feet upstream of Dupont Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Christopher Creek Tributary 1	Approximately 30 feet upstream of Dupont Avenue	Approximately 360 feet upstream of Dupont Avenue	*	*	*	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Colorado Creek	Confluence with Saint Johns River	Approximately 4,440 feet upstream of confluence with Saint Johns River	ADCIRC+ SWAN	JPM-OS	2015	VE, AE	Offshore starting wave conditions are required for 1-D transect-based wave hazard analysis. As part of the JPM-OS ADCIRC+SWAN regional hydrodynamic and wave modeling, significant wave heights and peak wave periods were produced at each node contained in the ADCIRC mesh. These results provided valuable information on the wave conditions that can be expected to occur during the types of extreme storm events that would produce storm surge elevations with 1- and 0.2-percent-annual-chance probabilities of occurrence. Results from the ADCIRC+SWAN modeling were used to develop starting wave conditions for the coastal hazard analyses within the study area. The Joint Probability Method with Optimal Sampling (JPM-OS) was applied to compute Total Stillwater Elevations (SWELs).
Cormorant Branch ¹	Confluence with Saint Johns River	At Marbon Road	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Cormorant Branch ¹	At Marbon Road	At Ricky Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Cradle Creek	Confluence with Intracoastal Waterway	Approximately 0.9 miles upstream of confluence with Intracoastal Waterway	ADCIRC+ SWAN	JPM-OS	2015	AE	Offshore starting wave conditions are required for 1-D transect-based wave hazard analysis. As part of the JPM-OS ADCIRC+SWAN regional hydrodynamic and wave modeling, significant wave heights and peak wave periods were produced at each node contained in the ADCIRC mesh. These results provided valuable information on the wave conditions that can be expected to occur during the types of extreme storm events that would produce storm surge elevations with 1- and 0.2-percent-annual-chance probabilities of occurrence. Results from the ADCIRC+SWAN modeling were used to develop starting wave conditions for the coastal hazard analyses within the study area. The Joint Probability Method with Optimal Sampling (JPM-OS) was applied to compute Total Stillwater Elevations (SWELs).
Craig Creek	Mouth at Saint Johns River	At Railroad	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Craig Creek	At Railroad	At Interstate-95	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Deep Bottom Creek	Confluence with Saint Johns River	Approximately 2,260 feet upstream of Scott Mill Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Deep Bottom Creek	Approximately 2,260 feet upstream of Scott Mill Road	Approximately 800 feet upstream of confluence with Deep Bottom Creek Tributary 1	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Deep Bottom Creek	Approximately 800 feet upstream of confluence with Deep Bottom Creek Tributary 1	Approximately 1,990 feet upstream of Hampton Road	*	*	*	A	
Deep Bottom Creek Tributary 1	Confluence with Deep Bottom Creek	Approximately 1,750 feet upstream of confluence with Deep Bottom Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Deep Bottom Creek Tributary 2	Confluence with Deep Bottom Creek	Approximately 360 feet upstream of confluence with Deep Bottom Creek	*	*	*	A	
Deer Creek	Confluence with Saint Johns River	Approximately 800 feet upstream of Talleyrand Avenue	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Deer Creek	Approximately 800 feet upstream of Talleyrand Avenue	Approximately 2,800 feet upstream of Talleyrand Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Deese Creek	Confluence with Nassau River	Approximately 3.2 miles upstream of confluence with Nassau River	ADCIRC+ SWAN	JPM-OS	2015	AE	Offshore starting wave conditions are required for 1-D transect-based wave hazard analysis. As part of the JPM-OS ADCIRC+SWAN regional hydrodynamic and wave modeling, significant wave heights and peak wave periods were produced at each node contained in the ADCIRC mesh. These results provided valuable information on the wave conditions that can be expected to occur during the types of extreme storm events that would produce storm surge elevations with 1- and 0.2-percent-annual-chance probabilities of occurrence. Results from the ADCIRC+SWAN modeling were used to develop starting wave conditions for the coastal hazard analyses within the study area. The Joint Probability Method with Optimal Sampling (JPM-OS) was applied to compute Total Stillwater Elevations (SWELs).
Dunn Creek	At railroad	Approximately 1,500 feet upstream of New Berlin Road	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Dunn Creek	Approximately 1,500 feet upstream of New Berlin Road	Approximately 1.7 miles upstream of confluence with Dunn Creek Tributary 2	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Dunn Creek Tributary 1	Confluence with Dunn Creek	Approximately 3,550 feet upstream of confluence with Dunn Creek	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Dunn Creek Tributary 1	Approximately 3,550 feet upstream of confluence with Dunn Creek	Approximately 5,000 feet upstream of Starratt Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Dunn Creek Tributary 2	Confluence with Dunn Creek	Approximately 4,850 feet upstream of confluence with Dunn Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Dunn Creek Tributary 2	Approximately 4,850 feet upstream of confluence with Dunn Creek	Approximately 1.4 miles upstream of confluence with Dunn Creek	*	*	*	A	
Dunn Creek Tributary 3	Confluence with Dunn Creek Tributary 1	At Starratt Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Durbin Creek	County boundary of Saint Johns/Duval County	Approximately 1.2 miles upstream of county boundary of Saint Johns County/Duval County	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Durbin Creek	Approximately 1.2 miles upstream of county boundary of Saint Johns County/Duval County	Approximately 6,800 feet upstream of confluence with Durbin Creek Tributary 1	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Durbin Creek Tributary 1	Confluence with Durbin Creek	Approximately 1,500 feet upstream of Flagler Center Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Durbin Creek Tributary 2	Confluence with Durbin Creek Tributary 1	Approximately 1,800 feet upstream of confluence with Durbin Creek Tributary 1	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Durbin Creek Tributary 3	Confluence with Durbin Creek	County boundary of Saint Johns County/Duval County	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
East Branch	Confluence with Trout River	At Capper Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
East Branch	At Capper Road	Approximately 100 feet upstream of confluence with East Branch Tributary 1	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
East Branch	Approximately 100 feet upstream of confluence with East Branch Tributary 1	Approximately 590 feet upstream of Natalie Drive	*	*	*	AO	
East Branch Tributary 1	Confluence with East Branch	Approximately 60 feet upstream of Lem Turner Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Fishing Creek	Confluence with Ortega River	Approximately 4,350 feet upstream of confluence with Ortega River	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Fishing Creek	Approximately 4,350 feet upstream of confluence with Ortega River	Approximately 1,500 feet upstream of Jammes Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Fishing Creek	Approximately 1,500 feet upstream of Jammes Road	Approximately 2,940 feet upstream of Jammes Road	*	*	*	A	
Fishing Creek Tributary 1	Confluence with Fishing Creek	Approximately 300 feet upstream of 103 rd Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ginhouse Creek ¹	Confluence with Saint Johns River	At Monument Road	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Ginhouse Creek ¹	At Monument Road	Approximately 1,200 feet upstream of Agave Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Goodbys Creek ¹	Mouth at Saint Johns River	Approximately 200 feet upstream of confluence of Goodbys Creek Tributary 5	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Goodbys Creek ¹	Approximately 200 feet upstream of confluence of Goodbys Creek Tributary 5	Approximately 3 miles upstream of mouth at Praver Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Goodbys Creek	Approximately 3 miles upstream of mouth at Praver Drive	County boundary	*	*	*	A	
Goodbys Creek Tributary 1	Confluence with Goodbys Creek	Approximately 2,650 feet upstream of confluence with Goodbys Creek	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Goodbys Creek Tributary 1	Approximately 2,650 feet upstream of confluence with Goodbys Creek	Approximately 9,300 feet upstream of confluence with Goodbys Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Goodbys Creek Tributary 2	Confluence with Goodbys Creek	Approximately 2,500 feet upstream of confluence with Goodbys Creek	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Goodbys Creek Tributary 2	Approximately 2,500 feet upstream of confluence with Goodbys Creek	Approximately 1,750 feet upstream of Runnymede Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Goodbys Creek Tributary 3	Confluence with Goodbys Creek	Approximately 100 feet upstream of Philips Highway	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Goodbys Creek Tributary 4	Confluence with Goodbys Creek Tributary 2	Approximately 3,200 feet upstream of confluence with Goodbys Creek Tributary 2	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Goodbys Creek Tributary 5	Confluence with Goodbys Creek	Approximately 2,200 feet upstream of confluence with Goodbys Creek	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Greenfield Creek ¹	Approximately 1,000 feet downstream of Queens Harbor Boulevard	At Atlantic Boulevard	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Greenfield Creek ¹	At Atlantic Boulevard	Approximately 1,500 feet upstream of Hodges Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Gulley Branch	Confluence with Trout River	Approximately 3,200 feet upstream of confluence with Trout River	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Gulley Branch	Approximately 3,200 feet upstream of confluence with Trout River	Approximately 1,650 feet upstream of Dunn Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Half Creek	Confluence with Trout River	At Dunn Avenue	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Half Creek	At Dunn Avenue	Approximately 400 feet upstream of V C Johnson Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Half Creek Tributary 1	Confluence with Half Creek	Approximately 1,000 feet upstream of V C Johnson Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Half Creek Tributary 2	Confluence with Half Creek	Approximately 580 feet upstream of confluence with Half Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Hogan Creek	Confluence with Saint Johns River	Approximately 350 feet upstream of Hart Expressway	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Hogan Creek	Approximately 350 feet upstream of Hart Expressway	Approximately 1,050 feet upstream of 111 th Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Hogpen Creek	A point 5,000 feet upstream of confluence with Pablo Creek	Confluence with Hogpen Creek Tributary 1 and Sandalwood Canal	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Hogpen Creek Tributary 1	Confluence with Hogpen Creek	Approximately 1,250 feet upstream of confluence with Hogpen Creek	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Hogpen Creek Tributary 1	Approximately 1,250 feet upstream of confluence with Hogpen Cree	Approximately 1,350 feet upstream of Canyon Falls Drive	EPA SWMM5 Version 13	EPA SWMM5 Version 13	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 13 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Hopkins Creek	Confluence with Pablo Creek/ Intracoastal Waterway	Approximately 1,050 feet upstream of Cutlass Drive	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Hopkins Creek Tributary 1	Confluence with Hopkins Creek	Approximately 1,750 feet upstream of confluence with Hopkins Creek	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Hopkins Creek Tributary 2	Confluence with Hopkins Creek	Approximately 1,300 feet upstream of 5 th Street/Florida Boulevard	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Hopkins Creek Tributary 3	Confluence with Hopkins Creek Tributary 2	At 15 th Avenue North	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Jones Creek	Confluence with Saint Johns River	Approximately 2,850 feet upstream of confluence with Jones Creek Tributary 2	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Jones Creek	Approximately 2,850 feet upstream of confluence with Jones Creek Tributary 2	Confluence with Jones Creek Tributary 1	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Jones Creek Tributary 1	Confluence with Jones Creek	Approximately 2,200 feet upstream of Brookview Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Jones Creek Tributary 2	Confluence with Jones Creek	Approximately 150 feet upstream of State Highway 9A	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Julington Creek	Confluence with Saint Johns River	Approximately 4,900 feet upstream of confluence with Julington Creek Tributary 8	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Julington Creek	Approximately 4,900 feet upstream of confluence with Julington Creek Tributary 8	At Hood Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Julington Creek Tributary 1	Confluence with Julington Creek	At Deercreek Club Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Julington Creek Tributary 4	Confluence with Julington Creek	Approximately 2,400 feet upstream of Derby Forest Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Julington Creek Tributary 5	Confluence with Julington Creek	Approximately 500 feet upstream of Greenland Oaks Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Julington Creek Tributary 6	Confluence with Julington Creek	Approximately 1,300 feet upstream of confluence with Julington Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Julington Creek Tributary 6	Approximately 1,300 feet upstream of confluence with Julington Creek	Approximately 1 mile upstream of confluence with Julington Creek	*	*	*	A	
Julington Creek Tributary 8	Confluence with Julington Creek	At Caron Drive	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Julington Creek Tributary 8	At Caron Drive	Approximately 850 feet upstream of Julington Creek Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Cedar Creek	Confluence with Broward River	Approximately 900 feet downstream of Duval Road	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Little Cedar Creek	Approximately 900 feet downstream of Duval Road	At Owens Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Little Cedar Creek Tributary 1	Confluence with Little Cedar Creek and Little Cedar Creek Tributary 3	Approximately 1.25 miles upstream of Interstate-95	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Cedar Creek Tributary 1	Approximately 1.25 miles upstream of Interstate-95	Approximately 3,900 feet upstream of Airport Center Drive	*	*	*	A	
Little Cedar Creek Tributary 2	Confluence with Little Cedar Creek	Approximately 285 feet upstream of confluence with Little Cedar Creek	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Little Cedar Creek Tributary 2	Approximately 285 feet upstream of confluence with Little Cedar Creek	Approximately 150 feet upstream of Interstate-95	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Cedar Creek Tributary 3	Duval Lake Road	Approximately 923 feet upstream of Duval Lake Road	*	*	*	A	
Little Fishweir Creek	Confluence with Big Fishweir Creek	Approximately 60 feet upstream of Oak Street	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Little Fishweir Creek	Approximately 60 feet upstream of Oak Street	Approximately 50 feet upstream of Roosevelt Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Little Fishweir Creek Tributary 1	Confluence with Little Fishweir Creek	Approximately 700 feet upstream of confluence with Little Fishweir Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Pottsburg Creek	At Atlantic Boulevard	At Beach Boulevard	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Little Pottsburg Creek	At Beach Boulevard	Approximately 600 feet upstream of Interstate-95	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Pottsburg Creek Tributary 1	Confluence with Little Pottsburg Creek	Approximately 600 feet upstream of Hickman Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Pottsburg Creek Tributary 2	Confluence with Little Pottsburg Creek	Approximately 1,220 feet upstream of confluence with Little Pottsburg Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Pottsburg Creek Tributary 3	Confluence with Little Pottsburg Creek	Approximately 1,240 feet upstream of confluence with Little Pottsburg Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Little Pottsburg Creek Tributary 4	Confluence with Little Pottsburg Creek	Approximately 1,430 feet upstream of confluence with Little Pottsburg Creek	*	*	*	A	
Little Sixmile Creek	Confluence with Sixmile Creek and Ribault River	Approximately 2,700 feet upstream of 5 th Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Sixmile Creek Tributary 1	Confluence with Little Sixmile Creek	At Shawland Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Sixmile Creek Tributary 2	Confluence with Sixmile Creek Tributary 1	Approximately 750 feet upstream of Dahlia Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Sixmile Creek Tributary 3	Confluence with Sixmile Creek	Approximately 1,700 feet upstream of confluence with Little Sixmile Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Trout River	Confluence with Trout River	Approximately 1,500 feet upstream of confluence of Little Trout River Tributary 6	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Little Trout River	Approximately 1,500 feet upstream of confluence of Little Trout River Tributary 6	Approximately 1,000 feet upstream of confluence with Little Trout River Tributary 4	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Trout River	Approximately 1,000 feet upstream of confluence with Little Trout River Tributary 4	Approximately 1.6 miles upstream of confluence with Little Trout River Tributary 4	*	*	*	A	
Little Trout River Tributary 4	Confluence with Little Trout River	Approximately 1,200 feet upstream of confluence with Little Trout River	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Little Trout River Tributary 5	Confluence with Little Trout River	Approximately 1.1 miles upstream of confluence with Little Trout River	*	*	*	A	
Little Trout River Tributary 6	Confluence with Little Trout River	Approximately 850 feet upstream of confluence with Little Trout River	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Little Trout River Tributary 6	Approximately 850 feet upstream of confluence with Little Trout River	Approximately 2,150 feet upstream of confluence with Little Trout River	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Little Trout River Tributary 6	Approximately 2,150 feet upstream of confluence with Little Trout River	Approximately 3,620 feet upstream of confluence with Little Trout River	*	*	*	A	
Little Trout River Tributary 10	Confluence with Little Trout River	Approximately 2,500 feet upstream of confluence with Little Trout River	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Little Trout River Tributary 10	Approximately 2,500 feet upstream of confluence with Little Trout River	Approximately 2,600 feet upstream of confluence with Little Trout River	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Long Branch	Confluence with Saint Johns River	At Evergreen Avenue	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Long Branch	At Evergreen Avenue	Confluence with Long Branch Tributary 1	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Long Branch Tributary 1	Confluence with Long Branch	Approximately 840 feet upstream of confluence with Long Branch	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Magnolia Gardens Creek	Confluence with Ribault River	At Palmdale Street	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Magnolia Gardens Creek	At Palmdale Street	Approximately 300 feet upstream of Cleveland Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
McCoy Creek	Confluence with Saint Johns River	Approximately 500 feet upstream of Riverside Avenue	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
McCoy Creek	Approximately 500 feet upstream of Riverside Avenue	Approximately 200 feet upstream of Commonwealth Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
McCoy Creek North Branch	Confluence with McCoy Creek	At 3 rd Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
McCoy Creek North Branch	At 3 rd Street	Approximately 2,120 feet upstream of 3 rd Street	*	*	*	A	
McCoy Creek Southwest Branch	Confluence with McCoy Creek	At College Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
McCoy Creek Tributary 4	Confluence with McCoy Creek	Approximately 370 feet upstream of confluence with McCoy Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
McCoy Creek Tributary 4	Approximately 370 feet upstream of confluence with McCoy Creek	Approximately 1,225 feet upstream of confluence with McCoy Creek	*	*	*	A	
McCoy Creek Tributary 5	Confluence with McCoy Creek Southwest Branch	Approximately 40 feet upstream of Gilmore Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
McGirts Creek	Confluence with Ortega River	Approximately 1,100 feet upstream of Halsema Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
McGirts Creek	Approximately 1,100 feet upstream of Halsema Road	Approximately 4,090 feet upstream of Halsema Road	*	*	*	A	
McGirts Creek Tributary 11	Confluence with McGirts Creek	Approximately 2,100 feet upstream of confluence with McGirts Creek Tributary 13	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
McGirts Creek Tributary 11	Approximately 2,100 feet upstream of confluence with McGirts Creek Tributary 13	Approximately 4,630 feet upstream of confluence with McGirts Creek Tributary 13	*	*	*	AO	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
McGirts Creek Tributary 12	Confluence with McGirts Creek	Approximately 1,200 feet upstream of Williamson Avenue	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
McGirts Creek Tributary 12	Approximately 1,200 feet upstream of Williamson Avenue	Approximately 1 miles upstream of Williamson Avenue	*	*	*	AO	
McGirts Creek Tributary 13	Confluence with McGirts Creek Tributary 11	Approximately 1,020 feet upstream of confluence with McGirts Creek Tributary 11	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
McGirts Creek Tributary 13	Approximately 1,020 feet upstream of confluence with McGirts Creek Tributary 11	Approximately 4,890 feet upstream of confluence with McGirts Creek Tributary 11	*	*	*	A	
McGirts Creek Tributary 14	Confluence with McGirts Creek	Approximately 1,750 feet upstream of Joes Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
McGirts Creek Tributary 15	Approximately 570 feet upstream of confluence with Ortega River	Approximately 3,580 feet upstream of confluence with Ortega River	*	*	*	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
McGirts Creek Tributary 16	Confluence with McGirts Creek	Approximately 1.7 miles upstream of confluence with McGirts Creek	*	*	*	A	
Mill Dam Branch ¹	Confluence with Pablo Creek	Approximately 3,750 feet upstream of Leahy Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Mill Dam Branch Canal	Confluence with Mill Dam Branch	Approximately 100 feet upstream of Gate Parkway	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Mill Dam Branch Tributary 2	Confluence with Mill Dam Branch	At Beach Boulevard	*	*	*	A	
Mill Dam Branch Tributary 3	Confluence with Mill Dam Branch	Approximately 80 feet upstream of Beach Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Mill Dam Branch Tributary 4	Confluence with Mill Dam Branch	Approximately 30 feet upstream of Anniston Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Mill Dam Branch Tributary 5	Confluence with Mill Dam Branch	At Forest Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Miller Creek	Confluence with Saint Johns River	Approximately 150 feet upstream of confluence with Miller Creek Tributary 2	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Miller Creek	Approximately 150 feet upstream of confluence with Miller Creek Tributary 2	Approximately 400 feet upstream of Camden Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Miller Creek Tributary 1	Confluence with Miller Creek	Approximately 700 feet upstream of confluence with Miller Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Miramar Tributary	Confluence with Saint Johns River	At Gadsden Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Miramar Tributary	At Gadsden Road	Approximately 1,200 feet upstream of Orlando Circle	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Moncrief Creek ¹	Confluence with Trout River	Approximately 1.5 miles upstream of confluence with Trout River	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Moncrief Creek ¹	Approximately 1.5 miles upstream of confluence with Trout River	Approximately 250 feet upstream of 9 th Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Moncrief Creek Tributary 2	Confluence with Moncrief Creek	Approximately 2,100 feet upstream of confluence with Moncrief Creek	*	*	*	A	
Moncrief Creek Tributary 3	Confluence with Moncrief Creek	At railroad	*	*	*	A	
Moncrief Creek Tributary 4	Confluence with Moncrief Creek	Approximately 440 feet upstream of Spring Grove Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Moore Branch	Confluence with Yellow Water Creek	Approximately 2,360 feet upstream of confluence with Yellow Water Creek	*	*	*	A	
Mount Pleasant Creek ¹	Confluence with Greenfield Creek	Approximately 3,125 feet upstream of confluence with Tiger Pond Creek	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Mount Pleasant Creek ¹	Approximately 3,125 feet upstream of confluence with Tiger Pond Creek	Approximately 25 feet upstream of General Doolittle Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Mount Pleasant Creek Tributary 3	Confluence with Tiger Pond Creek	Approximately 500 feet upstream of confluence with Tiger Pond Creek	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Mount Pleasant Creek Tributary 3	Approximately 500 feet upstream of confluence with Tiger Pond Creek	Approximately 2,050 feet upstream of Ashley Melisse Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Mount Pleasant Creek Tributary 4	Confluence with Mount Pleasant Creek Tributary 3	Approximately 500 feet upstream of Matthew Ungar Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Mount Pleasant Creek Tributary 6	Confluence with Mount Pleasant Creek	At Running River Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Mount Pleasant Creek Tributary 7	Confluence with Mount Pleasant Creek	Approximately 1,110 feet upstream of confluence with Mount Pleasant Creek	*	*	*	A	
Mount Pleasant Creek Tributary 8	Confluence with Mount Pleasant Creek	Approximately 1,330 feet upstream of confluence with Mount Pleasant Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Mount Pleasant Creek Tributary 8	Approximately 1,330 feet upstream of confluence with Mount Pleasant Creek	Approximately 1,770 feet upstream of confluence with Mount Pleasant Creek	*	*	*	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Nassau River	Mouth with Atlantic Ocean	At Main Street	ADCIRC+SWAN	JPM-OS	2015	VE, AE	Offshore starting wave conditions are required for 1-D transect-based wave hazard analysis. As part of the JPM-OS ADCIRC+SWAN regional hydrodynamic and wave modeling, significant wave heights and peak wave periods were produced at each node contained in the ADCIRC mesh. These results provided valuable information on the wave conditions that can be expected to occur during the types of extreme storm events that would produce storm surge elevations with 1- and 0.2-percent-annual-chance probabilities of occurrence. Results from the ADCIRC+SWAN modeling were used to develop starting wave conditions for the coastal hazard analyses within the study area. The Joint Probability Method with Optimal Sampling (JPM-OS) was applied to compute Total Stillwater Elevations (SWELs).
Nassau River	At Main Street	Confluence with Thomas Creek	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
New Rose Creek	Confluence with Saint Johns River	At Cornell Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
New Rose Creek	At Cornell Road	At St. Augustine Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
New Rose Creek Tributary 1	Confluence with New Rose Creek	Approximately 1,900 feet upstream of Cornell Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
New Rose Creek Tributary 1	Approximately 1,900 feet upstream of Cornell Road	Approximately 100 feet upstream of Grant Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
New Rose Creek Tributary 1	Approximately 100 feet upstream of Grant Road	Approximately 1,730 feet upstream of Grant Road	*	*	*	A	
New Rose Creek Tributary 2	Confluence with New Rose Creek Tributary 1	Approximately 470 feet upstream of confluence with New Rose Creek Tributary 1	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Newcastle Creek	Confluence with Saint Johns River	Approximately 50 feet upstream of Fort Caroline Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Newcastle Creek	Approximately 50 feet upstream of Fort Caroline Road	Approximately 100 feet upstream of Greenfern Lane	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Newcastle Creek Tributary 1	Confluence with Newcastle Creek	Approximately 720 feet upstream of confluence with Newcastle Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ninemile Creek	Confluence with Trout River	Approximately 1,500 feet upstream of New Kings Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Ninemile Creek	Approximately 1,500 feet upstream of New Kings Road	Approximately 1,250 feet upstream of Smalley Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ninemile Creek Tributary 1	Confluence with Ninemile Creek	Approximately 1,600 feet upstream of Old Kings Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ninemile Creek Tributary 2	Confluence with Ninemile Creek	Approximately 1,500 feet upstream of railroad	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ninemile Creek Tributary 6	Confluence with Ninemile Creek	Approximately 2,100 feet upstream of Old Kings Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
North Fork Sixmile Creek	Confluence with Sixmile Creek	Approximately 3,300 feet upstream of Fish Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
North Fork Sixmile Creek Tributary 1	Confluence with Sixmile Creek	Approximately 3,600 feet upstream of Bulls Bay Highway	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Oldfield Creek	Mouth at Julington Creek	Approximately 1,500 feet upstream of confluence with Oldfield Creek Tributary 4	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Oldfield Creek	Approximately 1,500 feet upstream of confluence with Oldfield Creek Tributary 4	Confluence with Oldfield Creek Tributary 7	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Oldfield Creek Tributary 1	Confluence with Oldfield Creek	Approximately 6,250 feet upstream of Greenland Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Oldfield Creek Tributary 2	Confluence with Oldfield Creek	Approximately 60 feet upstream of St. Augustine Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Oldfield Creek Tributary 3	Confluence with Oldfield Creek	Approximately 2,250 feet upstream of confluence with Oldfield Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Oldfield Creek Tributary 4	Confluence with Oldfield Creek	At Shady Creek Drive	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Oldfield Creek Tributary 4	Confluence with Oldfield Creek	Approximately 250 feet upstream of Hood Landing Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Oldfield Creek Tributary 5	Confluence with Oldfield Creek	Approximately 1,640 feet upstream of Ambrosia Court	*	*	*	A	
Oldfield Creek Tributary 7	Confluence with Oldfield Creek	Approximately 430 feet upstream of Knottingby Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Open Creek ¹	2,000 feet downstream of San Pablo Parkway	Approximately 2,300 feet upstream of confluence with Open Creek Tributary 1	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Open Creek ¹	Approximately 2,300 feet upstream of confluence with Open Creek Tributary 1	Approximately 1,900 feet upstream of confluence with Open Creek Tributary 4	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Open Creek Tributary 1	Confluence with Open Creek	Approximately 1,950 feet upstream of confluence with Open Creek	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Open Creek Tributary 1	Approximately 1,950 feet upstream of confluence with Open Creek	Approximately 5,700 feet upstream of confluence with Open Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Open Creek Tributary 2	Confluence with Open Creek	Approximately 200 feet upstream of WM Davis Parkway	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Open Creek Tributary 3	Confluence with Open Creek	Approximately 1,300 feet upstream of confluence with Open Creek	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Open Creek Tributary 3	Approximately 1,300 feet upstream of confluence with Open Creek	Approximately 1,450 feet upstream of San Pablo Parkway	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Open Creek Tributary 4	Confluence with Open Creek	Approximately 1,300 feet upstream of Highland Glen Way	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ortega River	6 miles upstream of the mouth at Saint Johns River	At Interstate-295	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Ortega River	At Interstate-295	Confluence with McGirts Creek	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Ortega River Tributary 1	Confluence with Ortega River	Approximately 100 feet upstream of confluence with Tributary to Ortega River Tributary 1	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Ortega River Tributary 1	Approximately 100 feet upstream of confluence with Tributary to Ortega River Tributary 1	At Jubal Lane	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ortega River Tributary 2	Confluence with Ortega River	Approximately 900 feet upstream of Old Middleburg Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ortega River Tributary 2	Approximately 900 feet upstream of Old Middleburg Road	Approximately 2,200 feet upstream of Old Middleburg Road	*	*	*	AO	
Ortega River Tributary 3	Confluence with Ortega River	Approximately 225 feet upstream of Steamboat Springs Drive	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ortega River Tributary 4	Confluence with Ortega River	Approximately 100 feet upstream of Connie Jean Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ortega River Tributary 4	Approximately 100 feet upstream of Connie Jean Road	Approximately 2,000 feet upstream of Connie Jean Road	*	*	*	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Ortega River Tributary 5	Confluence with Ortega River	Approximately 75 feet upstream of Interstate-295	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ortega River Tributary 6	Confluence with Ortega River	At Interstate-295	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ortega River Tributary 7	Confluence with Ortega River	At Interstate-295	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ortega River Tributary 10	Confluence with Ortega River	Approximately 1,000 feet upstream of Brett Forest Drive	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ortega River Tributary 11	Confluence with Ortega River	Approximately 2,600 feet upstream of Invermere Boulevard	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Pablo Creek	Saint Johns/Duval county boundary	Approximately 1.7 miles upstream of confluence with Box Branch	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Pablo Creek	Approximately 1.7 miles upstream of confluence with Box Branch	Confluence with Sawmill Slough/ Buckhead Branch	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Pablo Creek Tributary 1	Confluence with Pablo Creek	Approximately 5,350 feet upstream of confluence with Pablo Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Pablo Creek Tributary 2	Confluence with Pablo Creek	Approximately 1.2 miles upstream of Kernan Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Pablo Creek Tributary 3	Confluence with Pablo Creek Tributary 2	Approximately 6,000 feet upstream of confluence with Cedar Swamp Creek Tributary 2	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Pickett Branch	Confluence with Cedar Creek	Approximately 500 feet upstream of confluence with Pickett Branch Tributary 5	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Pickett Branch Tributary 3	Confluence with Pickett Branch	Approximately 20 feet upstream of Pecan Park Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Pickett Branch Tributary 4	Confluence with Pickett Branch	Approximately 40 feet upstream of Pecan Park Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Pickett Branch Tributary 5	Confluence with Pickett Branch	Approximately 320 feet upstream of confluence with Pickett Branch	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Pottsburg Creek ¹	At Atlantic Boulevard	Approximately 2,700 feet upstream of Hogan Road	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Pottsburg Creek ¹	Approximately 2,700 feet upstream of Hogan Road	At Baymeadows Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Pottsburg Creek	At Baymeadows Road	Confluence with Julington Creek	*	*	*	A	
Pottsburg Creek Tributary 2	Confluence with Pottsburg Creek	Approximately 2,040 feet upstream of Grove Park Boulevard	*	*	*	A	
Pottsburg Creek Tributary 3	Confluence with Pottsburg Creek	Approximately 1,520 feet upstream of confluence with Pottsburg Creek	*	*	*	A	
Pottsburg Creek Tributary 4	Confluence with Pottsburg Creek	Approximately 950 feet upstream of East Road	*	*	*	A	
Pottsburg Creek Tributary 5	Confluence with Pottsburg Creek	Approximately 300 feet upstream of Spring Park Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Pottsburg Creek Tributary 7	Confluence with Pottsburg Creek	Approximately 2,165 feet upstream of confluence with Pottsburg Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Pottsburg Creek Tributary 7	Approximately 2,165 feet upstream of confluence with Pottsburg Creek	Approximately 2,770 feet upstream of confluence with Pottsburg Creek	*	*	*	A	
Puckett Creek ¹	1,000 feet downstream of Wonderwood Drive	Approximately 950 feet upstream of Fairway villas Drive	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Puckett Creek ¹	Approximately 950 feet upstream of Fairway Villas Drive	Approximately 1,050 feet upstream of Fairway Villas Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Red Bay Branch	Confluence with Strawberry Creek	Approximately 4,100 feet upstream of Lone Star Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Red Bay Branch Tributary 1	Confluence with Red Bay Branch	Approximately 100 feet upstream of Lone Star Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ribault River	From 3,000 feet downstream of Howell Drive	Approximately 2,300 feet upstream of Howell Drive	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Ribault River	Approximately 2,300 feet upstream of Howell Drive	Confluence with Sixmile Creek and Little Sixmile Creek	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ribault River Tributary 2	Confluence with Ribault River	Approximately 1,175 feet upstream of New Kings Road	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ribault River Tributary 5	Confluence with Ribault River	Approximately 2,200 feet upstream of confluence with Ribault River	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ribault River Tributary 8	Confluence with Ribault River	Approximately 1,600 feet upstream of Clyde Drive	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ribault River Tributary 9	Confluence with Ribault River	Approximately 300 feet upstream of West Virginia Avenue	EPA SWMM5 Version 14	EPA SWMM5 Version 14	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 14 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Ribault River Tributary 9	Approximately 300 feet upstream of West Virginia Avenue	Approximately 880 feet upstream of New Kings Road	*	*	*	A	
Rowell Creek	Confluence with Sal Taylor Creek	Approximately 650 feet upstream of Secluded Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Rowell Creek Tributary 1	Confluence with Rowell Creek	Confluence with Sal Taylor Creek	*	*	*	A	
Rowell Creek Tributary 2	Confluence with Rowell Creek	Approximately 3,700 feet upstream of New World Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Rushing Branch	Confluence with Dunn Creek	Approximately 2,500 feet upstream of Yellow Bluff Road	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Rushing Branch	Approximately 2,500 feet upstream of Yellow Bluff Road	Approximately 40 feet upstream of Cedar Point Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Rushing Branch Tributary 1	Confluence with Rushing Branch	At New Berlin Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sal Taylor Creek	Confluence with Yellow Water Creek	Approximately 3,900 feet upstream of confluence with Yellow Water Creek	*	*	*	A	
Sal Taylor Creek ¹	Approximately 3,900 feet upstream of confluence with Yellow Water Creek	Confluence with Rowell Creek Tributary 1 at Alcoy Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Sal Taylor Creek Tributary 2	Confluence with Sal Taylor Creek	Approximately 1,500 feet upstream of confluence with Sal Taylor Creek Tributary 3	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sal Taylor Creek Tributary 3	Confluence with Sal Taylor Creek Tributary 2	Approximately 3,400 feet upstream of confluence with Sal Taylor Creek Tributary 2	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sal Taylor Creek Tributary 4	Confluence with Sal Taylor Creek	Approximately 800 feet upstream of 103 rd Street	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sal Taylor Creek Tributary 5	Confluence with Sal Taylor Creek Tributary 4	Approximately 1,760 feet upstream of confluence with Sal Taylor Creek Tributary 4	*	*	*	A	
Sandalwood Canal	Confluence with Hogpen Creek	Approximately 1,150 feet upstream of confluence with Hogpen Creek	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Sandalwood Canal	Approximately 1,150 feet upstream of confluence with Hogpen Creek	Approximately 2.1 miles upstream of Kernan Boulevard	EPA SWMM5 Version 13	EPA SWMM5 Version 13	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 13 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Sawmill Slough/ Buckhead Branch	Confluence with Pablo Creek	Approximately 400 feet upstream of confluence with Sawmill Slough/ Buckhead Branch Tributary 2	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sawmill Slough/ Buckhead Branch Tributary 1	Confluence with Sawmill Slough/ Buckhead Branch	Approximately 1,200 feet upstream of J. Turner Butler Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sawmill Slough/ Buckhead Branch Tributary 2	Confluence with Sawmill Slough/ Buckhead Branch	Approximately 530 feet upstream of confluence with Sawmill Slough/ Buckhead Branch	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sawmill Slough/ Buckhead Branch Tributary 3	Confluence with Sawmill Slough/ Buckhead Branch	Divergence from Sawmill Slough/ Buckhead Branch	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Seaton Creek	Confluence with Thomas Creek	Confluence with Seaton Creek Tributary 2	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Seaton Creek Tributary 1	Confluence with Seaton Creek	Approximately 2.1 miles upstream of Arnold Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Seaton Creek Tributary 2	Confluence with Seaton Creek	At Arnold Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Seaton Creek Tributary 2	At Arnold Road	Approximately 1.0 mile upstream of Arnold Road	*	*	*	A	
Second Puncheon Branch ¹	Confluence with Pablo Creek	At Beach Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Second Puncheon Branch Tributary 1	Confluence with Second Puncheon Branch	Approximately 300 feet upstream of Baymeadows Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Second Puncheon Branch Tributary 2	Confluence with Second Puncheon Branch Tributary 1	Approximately 860 feet upstream of confluence with Second Puncheon Branch Tributary 1	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Second Puncheon Branch Tributary 3	Confluence with Second Puncheon Branch	Approximately 1.3 miles upstream of Baymeadows Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Second Puncheon Branch Tributary 4	Confluence with Second Puncheon Branch	Approximately 2,000 feet upstream of confluence with Second Puncheon Branch	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Second Puncheon Branch Tributary 5	Confluence with Second Puncheon Branch	At Gate Parkway	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Second Puncheon Branch Tributary 6	Confluence with Second Puncheon Branch	Unnamed Road at a point approximately 1,440 feet upstream of confluence with Second Puncheon Branch	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sherman Creek ¹	Approximately 1,000 feet downstream of Wonderwood Drive	At Seminole Road	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Sherman Creek ¹	At Seminole Road	Approximately 100 feet upstream of Seminole Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sherman Creek Canal	Confluence with Puckett Creek	Divergence from Sherman Creek	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Silversmith Creek	Confluence with Pottsburg Creek	At Arlington Road South	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Silversmith Creek	At Arlington Road South	Approximately 2,250 feet upstream of Silversmith Creek Tributary 1	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Silversmith Creek Tributary 1	Confluence with Silversmith Creek	Approximately 40 feet upstream of Century 21 Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sixmile Creek	Confluence with Ribault River	Approximately 3,100 feet upstream of Commonwealth Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sixmile Creek Tributary 6	Confluence with Sixmile Creek	Approximately 3,000 feet upstream of railroad	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sixmile Creek Tributary 9	Confluence with Sixmile Creek	At Pritchard Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
St. Johns River	At mouth	County boundary	ADCIRC+ SWAN	JPM-OS	2015	AE, VE	Offshore starting wave conditions are required for 1-D transect-based wave hazard analysis. As part of the JPM-OS ADCIRC+SWAN regional hydrodynamic and wave modeling, significant wave heights and peak wave periods were produced at each node contained in the ADCIRC mesh. These results provided valuable information on the wave conditions that can be expected to occur during the types of extreme storm events that would produce storm surge elevations with 1- and 0.2-percent-annual-chance probabilities of occurrence.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
St. Johns River, continued	At mouth	County boundary	ADCIRC+ SWAN	JPM-OS	2015	AE, VE	Results from the ADCIRC+SWAN modeling were used to develop starting wave conditions for the coastal hazard analyses within the study area. The Joint Probability Method with Optimal Sampling (JPM-OS) was applied to compute Total Stillwater Elevations (SWELs).
St. Mary's River Tributary ¹	Beaver Street	Approximately 3,700 feet upstream of Interstate-10	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Strawberry Creek ¹	Confluence with Pottsburg Creek	Approximately 1,900 feet upstream of confluence with Pottsburg Creek	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Strawberry Creek ¹	Approximately 1,900 feet upstream of confluence with Pottsburg Creek	Approximately 2.1 miles upstream of Mill Creek Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sweetwater Creek ¹	Confluence with Julington Creek	Approximately 2,300 feet upstream of Vineyard Lake Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Sweetwater Creek	Approximately 2,300 feet upstream of Vineyard Lake Road	Approximately 3,215 feet upstream of Vineyard Lake Road	*	*	*	AO	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Tacito Creek	Confluence with Saint Johns River	Approximately 2,000 feet upstream of Scott Mill Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Tacito Creek	Approximately 2,000 feet upstream of Scott Mill Road	Approximately 3,000 feet upstream of Scott Mill Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Thomas Creek	Confluence with Nassau River	Approximately 6.7 miles upstream of confluence with Nassau River	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Thomas Creek	Approximately 6.7 miles upstream of confluence with Nassau River	At Acree Road	USGS Regional Regression Equations	HEC-2	*	AE w/ Floodway	The 10-, 2-, 1-, and 0.2-percent annual-chance discharges were determined using USGS regional regression equations (USGS, 1982). Water-surface elevations were computed using the HEC-2 water-surface profile computer program (USACE, 1984). The starting water-surface elevation was determined using the normal depth method. Boundaries between cross sections were interpolated using topographic maps at a scale of 1:24,000 with a contour interval of 10 feet (USGS, various) and aerial photographs with a contour interval of 2 feet (Florida Department of Transportation, 1984)
Tiger Hole Swamp	Confluence with Pottsburg Creek	Approximately 1,650 feet upstream of J. Turner Butler Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Tiger Pond Creek	Confluence with Mount Pleasant Creek	Approximately 575 feet upstream of confluence with Mount Pleasant Creek Tributary 3	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Tiger Pond Creek	Approximately 575 feet upstream of confluence with Mount Pleasant Creek Tributary 3	Approximately 1,600 feet upstream of McCormick Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Tiger Pond Creek Tributary 1	Confluence with Tiger Pond Creek	Approximately 620 feet upstream confluence with Tiger Pond Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Tributary to Little Sixmile Creek Tributary 1	Confluence with Little Sixmile Creek Tributary 1	At Edgewood Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Tributary 1 to Miramar Tributary	Confluence with Miramar Tributary	Approximately 1,025 feet upstream of Greenridge Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Tributary to Ortega River Tributary 1	Confluence with Ortega River Tributary 1	At Ortega Park Boulevard	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Tributary to Ortega River Tributary 1	At Ortega Park Boulevard	Approximately 1,800 feet upstream of Ortega Park Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Tributary to Ribault River Tributary 9	Confluence with Ribault River Tributary 9	At Moncrief Road W	*	*	*	A	
Trout River ¹	From 1,000 feet downstream of New Kings Road	At Old Kings Road	*	*	2015	AE w/ Floodway	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Trout River ¹	At Old Kings Road	Approximately 40 feet upstream of Cisco Gardens Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Trout River	Approximately 40 feet upstream of Cisco Gardens Road	Approximately 1,790 feet upstream of Cisco Gardens Road	*	*	*	A	
Trout River Tributary 2	Confluence with Trout River	Approximately 1,200 feet upstream of Jones Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Unnamed Ditch to Open Creek	Confluence with Open Creek	Approximately 1,965 feet upstream of confluence with Open Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Unnamed Tributary to Pottsburg Creek	Approximately 620 feet upstream of confluence with Pottsburg Creek	Approximately 2,800 feet upstream of confluence with Pottsburg Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
West Branch	Confluence with Trout River	Approximately 2,750 feet upstream of Capper Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
West Branch	Approximately 2,750 feet upstream of Capper Road	Approximately 1,200 feet upstream of Dunn Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
West Branch Tributary 1	Confluence with West Branch	Approximately 500 feet upstream of North Campus Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
West Branch Tributary 2	Confluence with West Branch	Approximately 60 feet upstream of Dunn Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
West Branch Tributary 2	Approximately 60 feet upstream of Dunn Avenue	Approximately 950 feet upstream of Dunn Avenue	*	*	*	A	
Wetland 2	Confluence with Wetland 3	Approximately 2,800 feet upstream of confluence with Wetland 3	*	*	*	AE	
Wetland 3	Confluence with Wetland 2	Approximately 2,800 feet upstream of confluence with Wetland 2	*	*	*	AE	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Williamson Creek	Confluence with Cedar River	At Jammes Road	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Williamson Creek	At Jammes Road	Approximately 50 feet upstream of Wilson Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Williamson Creek Tributary 3	Confluence with Williamson Creek	Approximately 50 feet upstream of Wilson boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Williamson Creek Tributary 4	Confluence with Williamson Creek	Approximately 1,440 feet upstream of confluence with Williamson Creek	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Wills Branch	Confluence with Cedar River	Approximately 1,200 feet upstream of confluence with Cedar River	*	*	2015	AE	Combined probability analysis was calculated for each riverine node that intersected the coastal surge.
Wills Branch	Approximately 1,200 feet upstream of confluence with Cedar River	Approximately 400 feet upstream of Ramona Boulevard	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Wills Branch Tributary 1	Confluence with Wills Branch	Approximately 50 feet upstream of Frank H Peterson Academy Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Wills Branch Tributary 1	Approximately 50 feet upstream of Frank H Peterson Academy Road	Approximately 775 feet upstream of Frank H Peterson Academy Road	*	*	*	A	
Wills Branch Tributary 2	Confluence with Wills Branch Tributary 1	Approximately 1,625 feet upstream of Fouraker Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Wills Branch Tributary 3	Confluence with Wills Branch	Approximately 100 feet upstream of I- 10 Expressway	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Wills Branch Tributary 4	Confluence with Wills Branch Tributary 3	Approximately 1,600 feet upstream of Herlong Road	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Wills Branch Tributary 5	Confluence with Wills Branch Tributary 1	Approximately 1,550 feet upstream of Hyde Grove Avenue	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Wills Branch Tributary 6	Confluence with Wills Branch Tributary 1	Approximately 60 feet upstream of Spring Branch Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.
Yellow Water Creek ¹	Saint Johns/Duval County boundary	Approximately 2,620 feet upstream of confluence with Caldwell Branch	*	*	*	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Yellow Water Creek Tributary 1	Approximately 100 feet downstream of Bicentennial Drive	Approximately 5,200 feet upstream of Bicentennial Drive	EPA SWMM5 Version 12	EPA SWMM5 Version 12	2009	AE w/ Floodway	The Environmental Protection Agency Stormwater Management Model (EPA SWMM5) version 12 (EPA, 2008-2009) was utilized for the hydrologic and hydraulic analyses.

*Data not available

¹The information contained in Table 24: Floodway Data and that shown on associated Flood Profiles were modeled separately; therefore node stationing does not match. Please see documentation for HEC/SWMM procedures for calculating floodway.

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Big Davis Creek	0.06	0.1 - 0.15
Big Fishweir Creek	0.03	0.15
Big Fishweir Tributary 1	0.03	0.15
Bigelow Branch	0.03	0.1 - 0.15
Blockhouse Creek	0.03 - 0.04	0.1 - 0.15
Bonett Branch	0.03	0.15
Box Branch	0.03	0.15
Box Branch Tributary 1	0.03	0.15
Butcher Pen Creek	0.03	0.15
Caldwell Branch	0.04 - 0.07	0.05 - 0.15
Caldwell Branch Tributary 1	0.048	0.15
Caldwell Branch Tributary 2	0.035 - 0.08	0.15
Caney Branch	0.03 - 0.05	0.12 - 0.13
Cedar Creek	0.03 - 0.12	0.15
Cedar Creek Tributary 2	0.03 - 0.12	0.15
Cedar Creek Tributary 6	0.03 - 0.12	0.15
Cedar Creek Tributary 7	0.03 - 0.12	0.15
Cedar Creek Tributary 8	0.03 - 0.12	0.15
Cedar River	0.03 - 0.035	0.1 - 0.15
Cedar River Tributary 1	0.03	0.12
Cedar River Tributary 12	0.03	0.12
Cedar River Tributary 13	0.03	0.12
Cedar River Tributary 14	0.03 - 0.035	0.12
Cedar River Tributary 17	0.03 - 0.035	0.12 - 0.15
Cedar Swamp Creek	0.03	0.065 - 0.15
Cedar Swamp Creek Tributary 1	0.03	0.15
Cedar Swamp Creek Tributary 2	0.03 - 0.1	0.15
Christopher Creek	0.03	0.07 - 0.15
Christopher Creek Tributary 1	0.03	0.1 - 0.15
Cormorant Branch	0.035	0.1
Craig Creek	0.013 - 0.03	0.1 - 0.15
Deep Bottom Creek	0.03	0.1 - 0.12

Table 14: Roughness Coefficients, continued

Flooding Source	Channel “n”	Overbank “n”
Deep Bottom Creek Tributary 1	0.03	0.12
Deer Creek	0.03	0.1 - 0.12
Dunn Creek	0.03 - 0.05	0.1 - 0.15
Dunn Creek Tributary 1	0.03 - 0.05	0.1 - 0.15
Dunn Creek Tributary 2	0.03 - 0.035	0.1
Durbin Creek	0.03 - 0.04	0.15
Durbin Creek Tributary 1	0.03 - 0.1	0.15
East Branch	0.03 - 0.04	0.15
Fishing Creek	0.03	0.15
Fishing Creek Tributary 1	0.03	0.15
Ginhouse Creek	0.03	0.15
Goodbys Creek	0.03 - 0.06	0.1 - 0.2
Goodbys Creek Tributary 1	0.03 - 0.04	0.15
Goodbys Creek Tributary 2	0.03 - 0.04	0.15
Goodbys Creek Tributary 3	0.03 - 0.05	0.15
Goodbys Creek Tributary 4	0.03	0.15
Goodbys Creek Tributary 5	0.03 - 0.035	0.15
Greenfield Creek	0.03	0.15
Gulley Branch	0.04	0.1 - 0.15
Half Creek	0.035 - 0.04	0.1 - 0.12
Half Creek Tributary 1	0.035	0.1 - 0.12
Hogan Creek	0.03 - 0.04	0.05 - 0.15
Hogpen Creek	0.03 - 0.035	0.1 - 0.15
Hogpen Creek Tributary 1	0.03	0.1 - 0.15
Hopkins Creek	0.03 - 0.4	0.065 - 0.2
Hopkins Creek Tributary 1	0.03 - 0.04	0.1 - 0.2
Hopkins Creek Tributary 2	0.03 - 0.035	0.05 - 0.2
Hopkins Creek Tributary 3	0.03	0.065 - 0.2
Jones Creek	0.03	0.15
Jones Creek Tributary 1	0.03	0.15
Jones Creek Tributary 2	0.03	0.15
Julington Creek	0.03 - 0.05	0.1 - 0.15

Table 14: Roughness Coefficients, continued

Flooding Source	Channel “n”	Overbank “n”
Julington Creek Tributary 4	0.03	0.15
Julington Creek Tributary 5	0.03	0.15
Little Cedar Creek	0.03 - 0.12	0.15
Little Cedar Creek Tributary 1	0.03 - 0.12	0.15
Little Cedar Creek Tributary 2	0.03	0.15
Little Fishweir Creek	0.03	0.15
Little Pottsburg Creek	0.03-0.035	0.125-0.15
Little Pottsburg Creek Tributary 2	0.03	0.15
Little Pottsburg Creek Tributary 3	0.03	0.15
Little Sixmile Creek	0.03	0.15
Little Sixmile Creek Tributary 1	0.03	0.15
Little Sixmile Creek Tributary 2	0.03	0.15
Little Sixmile Creek Tributary 3	0.03	0.15
Little Trout River	0.03 - 0.04	0.08 - 0.15
Little Trout River Tributary 4	0.04	0.1 - 0.12
Little Trout River Tributary 6	0.035 - 0.04	0.05 - 0.15
Little Trout River Tributary 10	0.03 - 0.04	0.1 - 0.15
Long Branch	0.03	0.1 - 0.14
Magnolia Gardens Creek	0.03	0.1 - 0.15
McCoy Creek	0.03 - 0.08	0.06 - 0.15
McCoy Creek North Branch	0.03 - 0.072	0.08 - 0.16
McCoy Creek Southwest Branch	0.03 - 0.08	0.03 - 0.15
McGirts Creek	0.09 - 0.25	0.15 - 0.3
McGirts Creek Tributary 11	0.05 - 0.25	0.25
McGirts Creek Tributary 12	0.03	0.12 - 0.15
McGirts Creek Tributary 14	0.03 - 0.09	0.15
Mill Dam Branch	0.03 - 0.1	0.08 - 0.15
Mill Dam Branch Canal	0.03 - 0.08	0.05 - 0.15
Mill Dam Branch Tributary 3	0.03	0.1
Mill Dam Branch Tributary 4	0.03	0.1
Mill Dam Branch Tributary 5	0.05	0.08
Miller Creek	0.03	0.1 - 0.15
Miller Creek Tributary 1	0.03	0.1

Table 14: Roughness Coefficients, continued

Flooding Source	Channel “n”	Overbank “n”
Miramar Tributary	0.03	0.09 - 0.15
Moncrief Creek	0.03 - 0.06	0.1 - 0.2
Mount Pleasant Creek	0.03	0.15
Mount Pleasant Creek Tributary 3	0.03	0.15
Mount Pleasant Creek Tributary 4	0.03	0.15
Mount Pleasant Creek Tributary 6	0.03	0.15
Nassau River	0.015 - 0.06	0.06 - 0.19
New Rose Creek	0.03	0.1
New Rose Creek Tributary 1	0.03	0.1
Newcastle Creek	0.03	0.15
Newcastle Creek Tributary 1	0.03	0.15
Nine Mile Creek	0.03 - 0.045	0.1 - 0.15
Nine Mile Tributary 1	0.035 - 0.04	0.1 - 0.15
Nine Mile Tributary 2	0.03 - 0.035	0.15
Nine Mile Tributary 6	0.035	0.08 - 0.15
North Fork Sixmile Creek	0.03 - 0.04	0.1 - 0.15
North Fork Sixmile Creek Tributary 1	0.03	0.15
Oldfield Creek	0.03	0.12
Oldfield Creek Tributary 1	0.03	0.1 - 0.12
Oldfield Creek Tributary 2	0.03	0.12
Oldfield Creek Tributary 3	0.03	0.12
Oldfield Creek Tributary 4	0.03	0.1 - 0.12
Oldfield Creek Tributary 7	0.03	0.12
Open Creek	0.03	0.12 - 0.15
Open Creek Tributary 1	0.03	0.12 - 0.15
Open Creek Tributary 2	0.03	0.12 - 0.15
Open Creek Tributary 3	0.03	0.12
Open Creek Tributary 4	0.03	0.13 - 0.15
Ortega River	0.025 - 0.09	0.1 - 0.3
Ortega River Tributary 1	0.01 - 0.03	0.12 - 0.15
Ortega River Tributary 2	0.03 - 0.06	0.15
Ortega River Tributary 3	0.015 - 0.03	0.1 - 0.2

Table 14: Roughness Coefficients, continued

Flooding Source	Channel “n”	Overbank “n”
Ortega River Tributary 4	0.03 - 0.12	0.15
Ortega River Tributary 6	0.03	0.1 - 0.15
Ortega River Tributary 7	0.03	0.12
Ortega River Tributary 10	0.03 - 0.12	0.12 - 0.15
Pablo Creek	0.03 - 0.06	0.1 - 0.15
Pablo Creek Tributary 1	0.06	0.15
Pablo Creek Tributary 2	0.03 - 0.1	0.15
Pablo Creek Tributary 3	0.03 - 0.06	0.15
Pickett Branch	0.03	0.15
Pickett Branch Tributary 3	0.03	0.15
Pickett Branch Tributary 4	0.03	0.15
Pickett Branch Tributary 5	0.03	0.15
Pottsburg Creek	0.01 - 0.03	0.1 - 0.15
Pottsburg Creek Tributary 5	0.03	0.15
Puckett Creek	0.03	0.1 - 0.15
Red Bay Branch	0.03 - 0.06	0.12 - 0.15
Red Bay Branch Tributary 1	0.03	0.15
Ribault River	0.03	0.1 - 0.15
Ribault River Tributary 2	0.03	0.15
Ribault River Tributary 5	0.03	0.15
Ribault River Tributary 8	0.03	0.15
Ribault River Tributary 9	0.03	0.15
Rowell Creek	0.03 - 0.08	0.05 - 0.15
Rowell Creek Tributary 2	0.035 - 0.07	0.1 - 0.15
Rushing Branch	0.03 - 0.035	0.12 - 0.13
Sal Taylor Creek	0.03 - 0.05	0.15
Sal Taylor Creek Tributary 2	0.015 - 0.1	0.08 - 0.15
Sal Taylor Creek Tributary 3	0.1	0.1
Sal Taylor Creek Tributary 4	0.04 - 0.05	0.1 - 0.15
Sandalwood Canal	0.03 - 0.1	0.1 - 0.15
Sawmill Slough/Buckhead Branch	0.03	0.15
Sawmill Slough/Buckhead Branch Tributary 1	0.03	0.15

Table 14: Roughness Coefficients, continued

Flooding Source	Channel “n”	Overbank “n”
Seaton Creek	0.045 - 0.07	0.15
Seaton Creek Tributary 1	0.045 - 0.06	0.15
Seaton Creek Tributary 2	0.07	0.15
Second Puncheon Branch	0.03 - 0.04	0.1 - 0.15
Second Puncheon Branch Tributary 1	0.03 - 0.1	0.08 - 0.15
Second Puncheon Branch Tributary 3	0.03	0.1 - 0.15
Second Puncheon Branch Tributary 4	0.08	0.15
Second Puncheon Branch Tributary 5	0.03	0.15
Second Puncheon Branch Tributary 6	0.08	0.15
Sherman Creek	0.03	0.1 - 0.15
Sherman Creek Canal	0.03 - 0.045	0.06 - 0.15
Silversmith Creek	0.03-0.035	0.1-0.15
Silversmith Creek Tributary 1	0.03-0.035	0.13-0.15
Sixmile Creek	0.03	0.1 - 0.15
Sixmile Creek Tributary 6	0.03	0.1 - 0.15
Sixmile Creek Tributary 9	0.03	0.15
St. Mary's River Tributary	0.03 - 0.08	0.10 - 0.15
Strawberry Creek	0.02 - 0.07	0.08 - 0.15
Sweetwater Creek	0.03 - 0.1	0.1 - 0.15
Tacito Creek	0.03	0.1 - 0.12
Thomas Creek	0.015 - 0.06	0.06 - 0.19
Tiger Hole Swamp	0.03	0.15
Tiger Pond Creek	0.03	0.15
Tributary 1 to Miramar Tributary	0.03	0.1 - 0.15
Trout River	0.03 - 0.04	0.09 - 0.15
Trout River Tributary 2	0.03 - 0.35	0.09 - 0.15
Trout River Tributary 3	0.035	0.1
Trout River Tributary 7	0.03 - 0.04	0.1
Trout River Tributary 8	0.03 - 0.04	0.1 - 0.15
West Branch	0.03 - 0.035	0.12 - 0.15

Table 14: Roughness Coefficients, continued

Flooding Source	Channel “n”	Overbank “n”
West Branch Tributary 1	0.03 - 0.035	0.15
Williamson Creek	0.03	0.15
Williamson Creek Tributary 3	0.03	0.15
Wills Branch	0.03 - 0.035	0.12 - 0.15
Wills Branch Tributary 1	0.03 - 0.035	0.12 - 0.15
Wills Branch Tributary 2	0.03 - 0.035	0.12 - 0.15
Wills Branch Tributary 3	0.03 - 0.035	0.12
Wills Branch Tributary 4	0.03 - 0.035	0.12 - 0.15
Wills Branch Tributary 5	0.03	0.12
Wills Branch Tributary 6	0.03	0.12
Yellow Water Creek Tributary 1	0.035 - 0.08	0.15

5.3 Coastal Analyses

For the areas of Duval County that are impacted by coastal flooding processes, coastal flood hazard analyses were performed to provide estimates of coastal BFEs. Coastal BFEs reflect the increase in water levels during a flood event due to extreme tides and storm surge as well as overland wave effects.

The following subsections provide summaries of how each coastal process was considered for this FIS Report. Greater detail (including assumptions, analysis, and results) is available in the Nassau County, 2015, Technical Support Documentation Notebook (TSDN). Table 15 summarizes the methods and/or models used for the coastal analyses. Refer to Section 2.5.1 for descriptions of the terms used in this section.

Table 15: Summary of Coastal Analyses

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Atlantic Ocean	Entire coastline of Duval County	Entire coastline of Duval County	Storm Climatology Statistical Analysis	JPM-OS	11/01/2013
Atlantic Ocean	Entire coastline of Duval County	Entire coastline of Duval County	Storm Surge including Regional Wave Setup	SWAN+ ADCIRC (fully coupled model)	10/07/2013

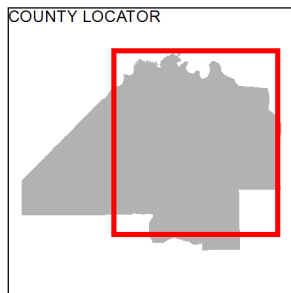
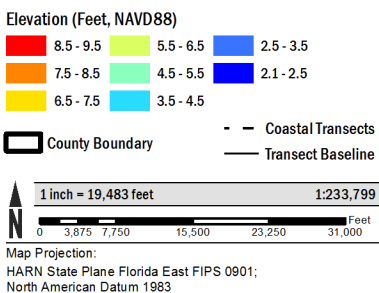
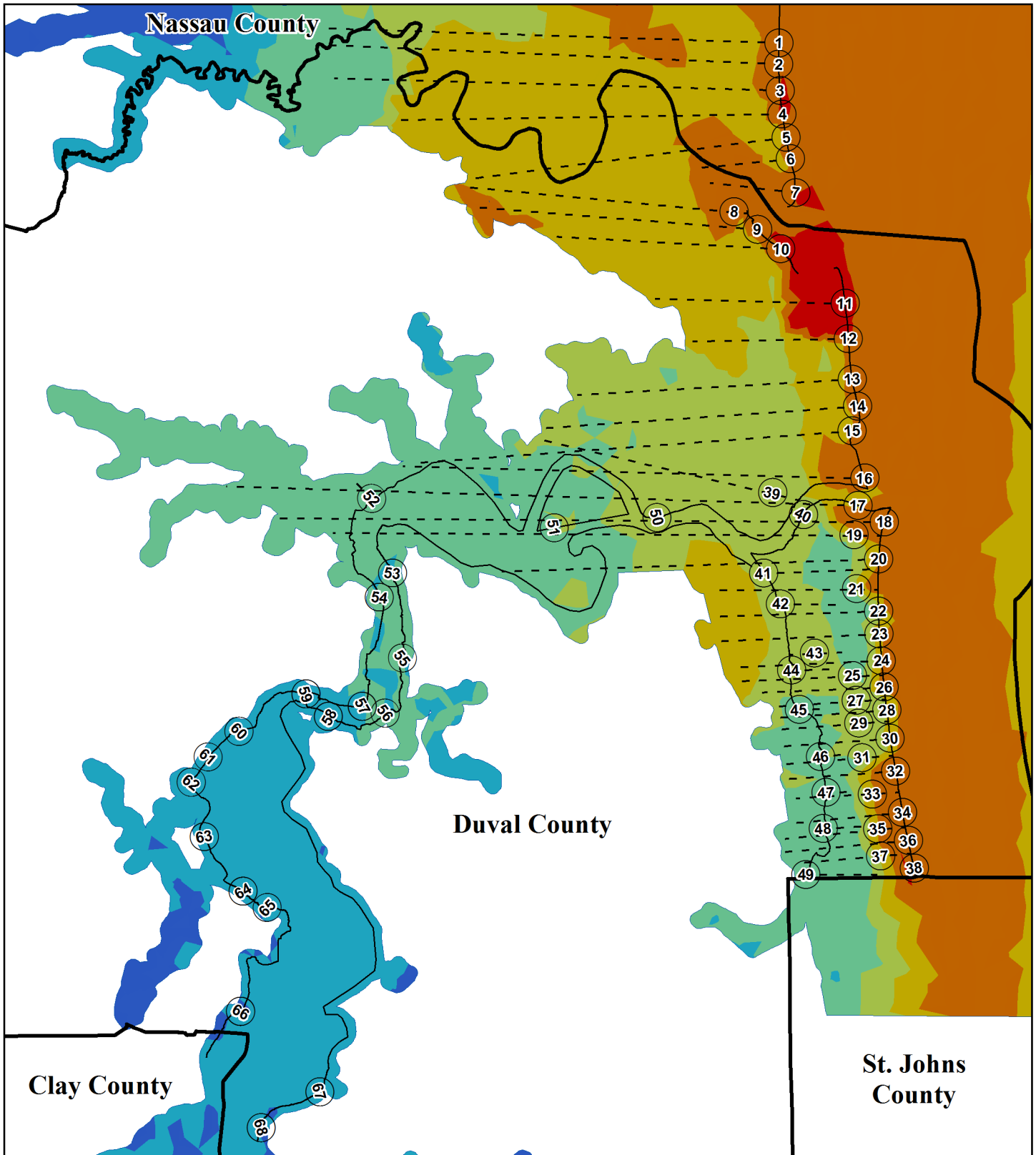
Table 15: Summary of Coastal Analyses, continued

Flooding Source	Study Limits From	Study Limits To	Hazard Evaluated	Model or Method Used	Date Analysis was Completed
Atlantic Ocean	Entire coastline of Duval County	Entire coastline of Duval County	Stillwater Frequency Analysis	SURGESTAT (low frequency); Tidal Frequency Analysis (high frequency)	11/21/2013
Atlantic Ocean	Entire coastline of Duval County	Entire coastline of Duval County	Overland Wave Propagation	WHAFIS 4.0	11/06/2015
Atlantic Ocean	Entire coastline of Duval County	Entire coastline of Duval County	Wave Runup	Runup 2.0; TAW	11/06/2015
Atlantic Ocean	Entire coastline of Duval County	Entire coastline of Duval County	Erosion	FEMA 540 SF Rule	11/06/2015

5.3.1 Total Stillwater Elevations

The total stillwater elevations (stillwater including storm surge plus wave setup) for the 1% annual chance flood were determined for areas subject to coastal flooding. The models and methods that were used to determine storm surge and wave setup are listed in Table 15. The stillwater elevation that was used for each transect in coastal analyses is shown in Table 17, “Coastal Transect Parameters.” Figure 8 shows the total stillwater elevations for the 1% annual chance flood that was determined for this coastal analysis.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas



NATIONAL FLOOD INSURANCE PROGRAM

1 Percent-Annual-Chance Stillwater Elevation Map

DUVAL COUNTY, FLORIDA



FEMA

Note: This figure displays 1%-annual-chance stillwater elevations (including wave set-up). Overland wave height information is not included. Base Flood Elevations are not displayed.

Astronomical Tide

Astronomical tidal statistics were generated directly from local tidal constituents by sampling the predicted tide at random times throughout the tidal epoch.

Storm Surge Statistics

Storm surge is modeled based on characteristics of actual storms responsible for significant coastal flooding. The characteristics of these storms are typically determined by statistical study of the regional historical record of storms or by statistical study of tidal gages.

When historic records are used to calculate storm surge, characteristics such as the strength, size, track, etc., of storms are identified by site. Storm data was used with hydrodynamic models to determine storm surge levels.

Statistical analyses were performed to determine the annual chance flood elevations for the GANEFL study. The study considered both high frequency (i.e., 50-, 25-, 10-, and 4-percent-annual-chance) events as well as low frequency (i.e., 2-, 1-, and 0.2-percent-annual-chance) events.

Flood estimates for the low frequency events were derived by simulating a large number of storm events using a coupling of hydrodynamic and wave models (i.e., the ADCIRC-ADvanced CIRCulation model, Luetlich and Westerink (2004), and the SWAN-Simulating Waves Nearshore model, Delft University of Technology (2006)). Key storm parameters (central pressure deficit, radius to maximum winds, forward speed, track heading, and the Holland's B parameter) were used to represent a population of historic and synthetic storm events. The Joint Probability Method with Optimal Sampling (JPM-OS), developed by Resio (Resio, 2007) and Toro et. al. (Toro, 2010), was applied to compute Stillwater Elevations (SWELs), which include the storm surge component and the wave setup component.

High frequency events were computed based on the approach described in the report "Tide Gage Analysis for the Atlantic and Gulf Open Coast" dated December 2, 2008 (Federal Emergency Management Agency, 2008). The methods from this previous study were applied to updated tide records, through the end of 2012, which added six years of additional data to the analysis. In addition, the regionalization of the tide gages from the previous study was re-evaluated and revised using the additional data and observations of revised statistical parameters. Table 16 provides the gage name, managing agency, gage type, gage identifier, start date, end date, and statistical methodology applied to each gage used to determine the high frequency stillwater elevations.

Tidal gages can be used instead of historic records of storms when the available tidal gage record for the area represents both the astronomical tide component and the storm surge component. Table 16 provides the gage name, managing agency, gage type, gage identifier, start date, end date, and statistical methodology applied to each gage used to determine the stillwater elevations.

Table 16: Tide Gage Analysis Specifics

Gage Name	Managing Agency of Tide Gage Record	Gage Type	Start Date	End Date	Statistical Methodology
Charleston – 8665530	NOAA	Tide	1899	Present	L-moments, GEV
Daytona Beach Shores - 8721120	NOAA	Tide	1966	1984	L-moments, GEV
Fernandina Beach - 8720030	NOAA	Tide	1898	Present	L-moments, GEV
Fort Pulaski - 8670870	NOAA	Tide	1935	Present	L-moments, GEV
Lake Worth Pier - 8722670	NOAA	Tide	1970	Present	L-moments, GEV
Mayport Ferry Depot - 8720220	NOAA	Tide	1928	2008	L-moments, GEV
Miami Beach - 8723170	NOAA	Tide	1931	1981	L-moments, GEV
St Augustine - 8720587	NOAA	Tide	1992	2004	L-moments, GEV
Trident Pier - 8721604	NOAA	Tide	1994	Present	L-moments, GEV
Virginia Key - 8713214	NOAA	Tide	1994	Present	L-moments, GEV

Combined Riverine and Tidal Effects

A combined probability analysis was conducted to compute a 1-percent-annual-chance BFE for areas subject to flooding by both coastal and riverine flooding mechanisms. Since riverine and coastal analyses were based on independent events, the resulting combined BFE would be higher than that of their individual occurrence. In other words, at the location where the computed 1-percent-annual-chance coastal flood level equals the computed 1-percent-annual-chance riverine flood level, there was a greater than 1-percent-annual-chance of this flood level being equaled or exceeded. In Duval County, streams with combined probability analysis are noted in Table 24: Floodway Data and on associated profiles.

Wave Setup Analysis

Wave setup was computed during the storm surge modeling through the methods and models listed in Table 15 and included in the frequency analysis for the determination of the total stillwater elevations.

5.3.2 Waves

Offshore wave conditions were modeled as part of the regional hydrodynamic and wave modeling (ADCIRC + SWAN). The regional model results provided valuable information on the wave conditions that could be expected to occur during the types of extreme storm events that would produce storm surge elevations with 1- and 0.2-percent-annual-chance probabilities of occurrence. Wave heights and periods derived from the SWAN model results were used as inputs to the wave hazard analyses described in Section 5.3.4.

5.3.3 Coastal Erosion

A single storm episode can cause extensive erosion in coastal areas. Storm-induced erosion was evaluated to determine the modification to existing topography that is expected to be associated with flooding events. Erosion was evaluated using the methods listed in Table 15. The post-event eroded profile was used for the subsequent wave hazard analyses.

5.3.4 Wave Hazard Analyses

Overland wave hazards were evaluated to determine the combined effects of ground elevation, vegetation, and physical features on overland wave propagation and wave runoff. These analyses were performed at representative transects along all shorelines for which waves were expected to be present during the floods of the selected recurrence intervals. The results of these analyses were used to determine elevations for the 1% annual chance flood.

Transect locations were chosen with consideration given to the physical land characteristics as well as development type and density so that they would closely represent conditions in their locality. Additional consideration was given to changes in the total stillwater elevation. Transects were spaced close together in areas of complex topography and dense development or where total stillwater elevations varied. In areas having more uniform characteristics, transects were spaced at larger intervals. Coastal transects may extend inland and cross multiple flooding sources. For some of these areas combined probability of coastal and riverine flooding may have been determined. In order to evaluate the proper source of flooding, the Flood Profile should be carefully reviewed. Transects shown in Figure 9, "Transect Location Map," are also depicted on the FIRM. Table 17 provides the location, stillwater elevations, and starting wave conditions for each transect evaluated for overland wave hazards. In this table, "starting" indicates the parameter value at the beginning of the transect.

Wave Height Analysis

Wave height analyses were performed to determine wave heights and corresponding wave crest elevations for the areas inundated by coastal flooding and subject to overland wave propagation hazards. Refer to Figure 6 for a schematic of a coastal transect evaluated for overland wave propagation hazards.

Wave heights and wave crest elevations were modeled using the methods and models listed in Table 15, "Summary of Coastal Analyses". For the 0.2-percent-annual-chance event, wave profiles were created to indicate the results of the wave height analysis at each transect (FEMA,

2007). Such wave profiles may show greater detail than the mapping product, due to limitations of the map scale and smoothing tolerances applied during boundary cleanup. Wave runup analysis for the 0.2-percent-annual-chance event was not performed for this study and is not included in the profiles.

Wave Runup Analysis

Wave runup analyses were performed to determine the height and extent of runup beyond the limit of stillwater inundation for the 1% annual chance flood. Wave runup elevations were modeled using the methods and models listed in Table 15.

Table 17: Coastal Transect Parameters

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H _s (ft)	Peak Wave Period T _p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean	1	18.6	13.6	2.2 1.6 – 2.2	2.3 1.8 – 2.3	2.9 2.1 – 2.9	9.0 5.3 – 9.0	9.4 4.9 – 9.4
Atlantic Ocean	2	17.3	12.3	5.8 2.7 – 5.8	6.2 2.9 – 6.2	7.6 3.6 – 7.7	9.0 5.3 – 9.1	11.5 6.9 – 11.7
Atlantic Ocean	3	17.3	12.4	5.5 3.1 – 5.5	5.9 3.3 – 5.9	7.3 4.1 – 7.3	8.9 5.2 – 9.1	11.5 7.0 – 11.7
Atlantic Ocean	4	17.3	12.4	5.6 3.8 – 5.7	6.0 4.0 – 6.1	7.4 5.0 – 7.6	8.8 6.8 – 9.1	11.4 9.1 – 11.7
Atlantic Ocean	5	17.1	12.1	5.7 4.4 – 5.7	6.1 4.2 – 6.1	7.5 5.2 – 7.5	8.9 7.1 – 8.9	11.5 9.1 – 11.5
Atlantic Ocean	6	17.3	12.1	5.7 4.1 – 5.7	6.1 4.4 – 6.1	7.5 5.5 – 7.5	8.9 7.2 – 8.9	11.5 9.4 – 11.5
Atlantic Ocean	7	17.4	12.2	5.6 5.1 – 5.6	6.0 5.4 – 6.0	7.4 6.5 – 7.4	8.8 7.8 – 9.0	11.3 10.0 – 11.6

Table 17: Coastal Transect Parameters, continued

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H _s (ft)	Peak Wave Period T _p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Nassau Sound	8	6.0	4.2	5.4 4.4-5.4	5.7 4.4-5.7	7.1 5.7-7.1	8.5 7.2-8.5	11.2 9.4-11.2
Nassau Sound	9	5.9	4.0	5.4 4.4-5.4	5.8 4.8-5.8	7.2 5.9-7.2	8.7 7.2-8.7	11.4 9.5-11.4
Nassau Sound	10	4.9	5.7	5.5 4.4-5.5	5.9 4.7-5.9	7.1 5.7-7.1	8.8 6.9-8.8	11.5 9.1-11.6
Atlantic Ocean	11	18.6	12.5	5.6 4.1-5.9	6.0 4.3-6.3	7.4 5.4-7.7	8.8 6.6-9.4	11.3 8.6-12.1
Atlantic Ocean	12	18.4	12.6	5.5 4.1-6.1	5.9 4.4-6.5	7.3 5.4-8.1	8.7 6.4-9.7	11.2 8.4-12.0
Atlantic Ocean	13	18.4	12.9	5.4 2.6-5.4	5.8 2.8-5.8	7.2 4.1-7.2	8.6 5.6-8.6	11.1 7.6-11.1
Atlantic Ocean	14	18.6	12.8	5.4 3.5-5.7	5.8 3.7-6.1	7.2 4.3-7.2	8.5 5.6-8.9	11.0 7.3-11.4

Table 17: Coastal Transect Parameters, continued

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H _s (ft)	Peak Wave Period T _p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean	15	19.1	12.8	5.5 1.2-5.6	5.9 1.3-6.0	7.3 1.6-7.4	8.6 4.9-8.8	11.1 6.0-11.3
Atlantic Ocean	16	18.6	12.6	5.5 2.1-5.5	5.9 2.3-5.9	7.2 2.9-7.3	8.5 4.6-8.8	11.0 6.5-11.3
St. Johns River	17	8.1	10.5	4.9 1.3-5.2	5.3 1.4-5.6	6.5 2.8-6.9	7.5 4.5-8.2	9.7 6.5-10.8
Atlantic Ocean	18	18.9	12.7	5.4 2.8-5.4	5.7 3.0-5.7	7.1 4.1-7.1	8.3 4.9-8.3	10.7 6.5-11.0
Atlantic Ocean	19	18.6	12.7	5.3 2.6-5.4	5.7 2.8-5.7	7.0 3.5-7.0	8.3 4.6-8.3	10.8 6.4-11.0
Atlantic Ocean	20	18.8	12.8	5.4 2.3-5.4	5.7 2.5-5.7	7.1 4.2-7.1	8.4 5.2-8.4	10.9 7.0-10.9
Atlantic Ocean	21	18.5	12.8	5.4 2.9-5.4	5.8 3.1-5.8	7.2 4.4-7.2	8.5 5.4-8.5	10.9 7.7-10.9

Table 17: Coastal Transect Parameters, continued

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H _s (ft)	Peak Wave Period T _p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean	22	18.6	12.8	5.4 3.2-5.4	5.8 3.5-5.8	6.9 4.4-6.9	8.5 5.4-8.5	10.9 7.7-10.9
Atlantic Ocean	23	18.8	12.6	5.4 1.1-5.4	5.7 1.2-5.7	6.9 4.4-6.9	8.6 5.4-8.8	11.1 7.7-11.2
Atlantic Ocean	24	18.6	12.8	5.5 3.8-5.5	5.9 4.0-5.9	7.2 4.4-7.3	8.7 5.4-8.8	11.1 7.5-11.3
Atlantic Ocean	25	18.6	12.8	5.6 3.6-5.6	6.0 3.9-6.0	7.3 4.4-7.4	8.7 5.4-8.8	11.1 7.3-11.2
Atlantic Ocean	26	18.6	12.4	5.4 3.3-5.6	5.7 3.6-6.0	7.0 4.5-7	8.4 5.5-8.4	10.9 7.3-10.9
Atlantic Ocean	27	18.7	12.8	5.4 3.2-5.4	5.7 3.4-5.7	6.9 4.0-6.9	8.5 5.3-8.5	10.7 7.3-10.9
Atlantic Ocean	28	18.6	12.6	5.4 3.3-5.4	5.7 3.6-5.7	7.0 4.8-7.0	8.4 5.6-8.4	10.9 7.3-10.9

Table 17: Coastal Transect Parameters, continued

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H _s (ft)	Peak Wave Period T _p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean	29	18.7	12.4	5.4 2.5 – 5.4	5.7 2.7 – 5.7	6.9 4.4 – 6.9	8.4 5.5 – 8.4	10.9 7.3 – 10.9
Atlantic Ocean	30	18.8	12.4	5.4 2.8 – 5.4	5.7 3.0 – 5.7	7.0 3.9 – 7.0	8.4 5.3 – 8.4	10.9 7.3 – 10.9
Atlantic Ocean	31	18.7	12.4	5.4 2.9 – 5.4	5.8 3.2 – 5.8	7.0 4.1 – 7.0	8.5 5.4 – 8.5	11.0 7.3 – 11.0
Atlantic Ocean	32	18.7	12.5	5.4 2.8 – 5.4	5.8 3.0 – 5.8	7.2 4.3 – 7.2	8.5 5.3 – 8.5	11.0 7.3 – 11.0
Atlantic Ocean	33	18.8	12.4	5.4 3.1 – 5.4	5.8 3.2 – 5.8	7.2 3.8 – 7.2	8.5 4.9 – 8.5	11.0 6.7 – 11.0
Atlantic Ocean	34	18.8	12.4	5.4 3.2 – 5.4	5.8 3.2 – 5.8	7.1 3.8 – 7.1	8.5 5.0 – 8.5	11.0 6.6 – 11.0
Atlantic Ocean	35	18.8	12.4	5.4 2.8 – 5.4	5.8 3.0 – 5.8	7.2 3.7 – 7.2	8.5 4.8 – 8.5	11.0 6.5 – 11.0

Table 17: Coastal Transect Parameters, continued

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H _s (ft)	Peak Wave Period T _p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Atlantic Ocean	36	18.8	12.4	5.4 3.1 – 5.4	5.8 3.3 – 5.8	7.2 4.3 – 7.2	8.5 5.1 – 8.5	11.0 6.6 – 11.0
Atlantic Ocean	37	18.8	12.4	5.4 2.4 – 5.4	5.8 2.6 – 5.8	7.2 3.7 – 7.2	8.5 4.8 – 8.6	11.0 6.5 - 11.1
Atlantic Ocean	38	18.7	12.5	5.5 5.5 – 5.5	5.9 5.9 – 5.9	7.3 6.5 – 7.3	8.6 8.6 – 8.6	11.1 11.1 – 11.1
St. Johns River	39	4.1	3.3	4.5 3.2 – 4.5	4.9 3.5 – 4.9	5.4 3.9 – 5.5	6.8 5.6 – 6.8	8.9 7.4 – 8.9
St. Johns River	40	3.8	3.4	4.4 4.4 – 4.4	4.7 3.7 – 4.7	5.8 5.0 – 5.8	6.7 6.5 – 6.7	8.6 8.4 – 8.6
Intracoastal Waterway	41	3.4	2.9	4.2 3.1 – 5.4	4.5 3.2 – 5.7	5.6 4.1 – 6.9	6.5 5.2 – 8.3	8.5 7.6 – 10.9
Intracoastal Waterway	42	3.0	2.8	4.1 3.2 – 4.1	4.4 3.5 – 4.4	5.4 4.4 – 5.4	6.3 5.9 – 6.3	8.3 7.7 – 8.3

Table 17: Coastal Transect Parameters, continued

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H _s (ft)	Peak Wave Period T _p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
Intracoastal Waterway	43	3.3	2.9	4.1 3.8 – 4.1	4.4 4.0 – 4.4	5.4 4.3 – 5.5	6.4 6.1 – 6.4	8.4 7.7 – 8.4
Intracoastal Waterway	44	2.9	2.9	4.1 3.8 – 4.1	4.4 4.0 – 4.4	5.4 4.6 – 5.4	6.4 5.9 – 6.4	8.4 7.9 – 8.4
Intracoastal Waterway	45	2.3	2.5	3.6 3.2 – 3.6	3.9 3.4 – 3.9	4.8 4.1 – 4.8	5.6 5.3 – 5.6	7.4 7.3 – 7.4
Intracoastal Waterway	46	2.1	2.5	3.6 3.6 – 3.6	3.9 3.9 – 3.9	4.8 4.8 – 4.8	5.6 5.6 – 5.6	7.3 7.3 – 7.4
Intracoastal Waterway	47	1.9	2.2	3.5 3.1 – 3.5	3.7 3.3 – 3.8	4.6 4.4 – 4.7	5.3 5.0 – 5.4	6.7 6.7 – 7.5
Intracoastal Waterway	48	1.7	2.3	3.5 3.4 – 3.5	3.7 3.6 – 3.8	4.6 3.9 – 4.7	5.3 5.1 – 6.0	6.6 6.6 – 9.1
Intracoastal Waterway	49	1.5	2.4	3.5 3.2 – 3.5	3.7 3.2 – 3.8	4.6 3.8 – 5.0	5.3 4.9 – 5.6	6.5 6.5 – 7.4

Table 17: Coastal Transect Parameters, continued

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H _s (ft)	Peak Wave Period T _p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
St. Johns River	50	3.2	3.0	3.9 3.9 – 3.9	4.2 4.2 – 4.2	5.2 5.1 – 5.2	6.0 6.0 – 6.1	7.7 7.7 – 7.8
St. Johns River	51	3.0	2.8	3.6 3.6 – 3.6	3.9 3.9 – 3.9	4.8 4.8 – 4.8	5.6 5.6 – 5.6	7.1 7.1 – 7.1
St. Johns River	52	2.4	2.9	3.0 2.7 – 3.3	3.2 2.9 – 3.6	4.2 3.6 – 4.4	5.0 4.8 – 5.1	6.6 6.6 – 6.8
St. Johns River	53	2.3	3.1	3.2 3.1 – 3.2	3.4 3.3 – 3.4	4.2 4.1 – 4.2	4.9 4.9 – 4.9	6.3 6.3 – 6.3
St. Johns River	54	3.5	3.3	3.1 3.1 – 3.1	3.3 3.3 – 3.3	4.1 4.0 – 4.2	4.9 4.9 – 4.9	6.3 6.3 – 6.3
St. Johns River	55	2.3	2.6	3.1 2.9 – 3.1	3.3 3.1 – 3.3	4.1 3.8 – 4.1	4.8 4.6 – 4.8	6.2 6.1 – 6.2
St. Johns River	56	2.4	2.9	2.9 2.9 – 3.0	3.2 3.2 – 3.2	3.9 3.8 – 3.9	4.7 4.6 – 4.7	6.1 6.0 – 6.1

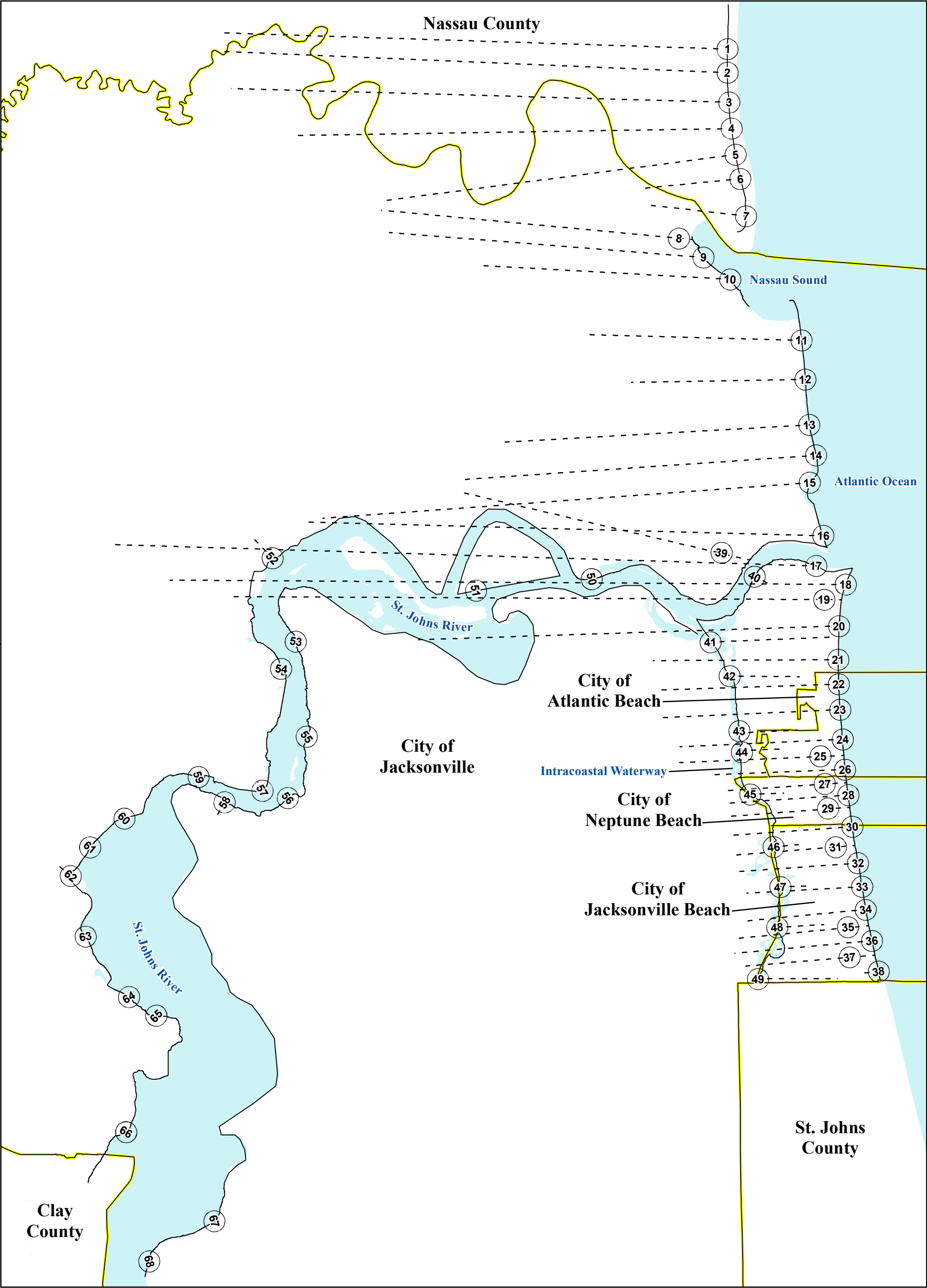
Table 17: Coastal Transect Parameters, continued

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H _s (ft)	Peak Wave Period T _p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
St. Johns River	57	2.9	3.0	2.9 2.9 – 2.9	3.2 3.2 – 3.2	3.9 3.6 – 3.9	4.6 4.4 – 4.6	5.9 5.9 – 6.1
St. Johns River	58	2.7	2.9	2.9 2.7 – 2.9	3.1 2.9 – 3.11	3.8 3.6 – 3.8	4.5 4.4 – 4.5	5.9 5.9 – 5.9
St. Johns River	59	2.6	3.0	2.7 2.7 – 2.7	2.9 2.9 – 2.9	3.6 3.6 – 3.6	4.3 4.3 – 4.3	5.9 5.9 – 5.9
St. Johns River	60	2.9	3.3	2.5 2.0 – 2.5	2.7 2.1 – 2.7	3.3 2.7 – 3.3	4.1 3.7 – 4.1	5.8 5.8 – 5.9
St. Johns River	61	2.8	3.5	2.4 2.4 – 2.5	2.6 2.6 – 2.7	3.2 3.2 – 3.2	4.0 4.0 – 4.0	5.9 5.9 – 5.9
St. Johns River	62	2.3	3.1	2.2 1.9 – 2.5	2.3 2.0 – 2.7	3.0 2.5 – 3.3	3.9 3.7 – 4.1	5.8 5.8 – 5.9
St. Johns River	63	3.1	3.5	2.5 2.5 – 2.5	2.7 2.7 – 2.7	3.3 3.3 – 3.3	4.0 4.0 – 4.0	5.6 5.6 – 5.6

Table 17: Coastal Transect Parameters, continued

Flood Source	Coastal Transect	Starting Wave Conditions for the 1% Annual Chance		Starting Stillwater Elevations (ft NAVD88) Range of Stillwater Elevations (ft NAVD88)				
		Significant Wave Height H_s (ft)	Peak Wave Period T_p (sec)	10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance	0.2% Annual Chance
St. Johns River	64	2.9	3.1	2.4 2.4 – 2.4	2.6 2.6 – 2.6	3.2 3.2 – 3.2	3.9 3.9 – 3.9	5.4 5.4 – 5.4
St. Johns River	65	3.3	3.3	2.1 2.1 – 2.1	2.3 2.3 – 2.6	3.0 2.8 – 3.11	3.8 3.7 – 3.8	5.3 5.3 – 5.3
St. Johns River	66	4.3	3.6	2.1 2.1 – 2.3	2.3 2.3 – 2.5	3.0 2.9 – 3.1	3.7 3.7 – 3.8	5.2 5.2 – 5.2
St. Johns River	67	1.9	3.0	2.4 2.4 – 2.4	2.6 2.6 – 2.6	3.2 3.0 – 3.2	3.8 3.7 – 3.8	5.0 5.0 – 5.0
St. Johns River	68	2.4	3.9	2.3 2.1 – 2.3	2.4 2.3 – 2.5	3.0 2.8 – 3.0	3.7 3.5 – 3.7	4.9 4.8 – 4.9

Figure 9: Transect Location Map



Map Projection:
HARN State Plane Florida East FIPS 0901;
North American Datum 1983

COUNTY LOCATOR

NATIONAL FLOOD INSURANCE PROGRAM
Transect Locator Map **DUVAL COUNTY, FLORIDA**

PANELS WITH TRANSECTS:
0035, 0055, 0060, 0065, 0070, 0090, 0100, 0189, 0192, 0193, 0194, 0210, 0211, 0212, 0213, 0214, 0216, 0217, 0218, 0219, 0230, 0231, 0233, 0236, 0237, 0238, 0239, 0241, 0242, 0243, 0244, 0359, 0362, 0364, 0366, 0367, 0376, 0377, 0378, 0381, 0382, 0401, 0402, 0404, 0406, 0407, 0408, 0409, 0412, 0414, 0416, 0417, 0418, 0419, 0531, 0533, 0542, 0543

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

**Table 18: Summary of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]**

**Table 19: Results of Alluvial Fan Analyses
[Not Applicable to this Flood Risk Project]**

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey (NGS) at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact information services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

The datum conversion locations and values that were calculated for Duval County are provided in Table 20.

Table 20: Countywide Vertical Datum Conversion
[Not Applicable to this Flood Risk Project]

The countywide conversion factor from NGVD 29 to NAVD 88 is -1.06 for Duval County.

Table 21: Stream-Based Vertical Datum Conversion
[Not Applicable to this Flood Risk Project]

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's *Guidelines and Standards for Flood Risk Analysis and Mapping*, www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping.

Base map information shown on the FIRM was derived from the sources described in Table 22.

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Coastal Barrier Resources System	U.S. Fish and Wildlife Service	1991	*	Digital coastal barrier resources system data
Digital Orthophoto	U.S. Department of Agriculture Farm Service Agency	2013	*	2013 NAIP Imagery
Political boundaries	City of Jacksonville	2008	*	Municipal and county boundaries
Public Land Survey System (PLSS)	City of Jacksonville	2008	*	PLSS digital data
Surface Water Features	FEMA	2013	*	Streams, rivers, and lakes were derived from NFHL data
Transportation Features	City of Jacksonville	2008	*	Roads and railroads

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23. For each coastal flooding source studied as part of this FIS Report, the mapped floodplain boundaries on the FIRM have been delineated using the flood and wave elevations determined at each transect; between transects, boundaries were delineated using land use and land cover data, the topographic elevation data described in Table 23, and knowledge of coastal flood processes. In ponding areas, flood elevations were determined at each junction of the model; between

junctions, boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, "Floodway Data."

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data					
		Description	Scale	Contour Interval	RMSE _z	Accuracy _z	Citation
Entire Coastline of Duval County	Atlantic Ocean	LiDAR	N/A	N/A	4.6 cm	9.1 cm	2007 FDEM LiDAR: Duval County
Duval County	All Flooding Sources	Topographic Maps	1:24,000	10 ft	N/A	N/A	USGS, various
Duval County	All Flooding Sources	Aerial Photographs	N/A	2 ft	N/A	N/A	Florida Department of Transportation

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations.